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Telephony®

THE JOURNAL OF THE TELEPHONE INDUSTRY

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Guaranteed Circulation This Issue
13,731 of Which 13,214 Is Paid

CANOPY BOOTH

Weather in the nation's 50th state permits the use of this new plastic canopy telephone booth throughout the year. This one's in use by Hawaiian Telephone Co. service representative Ardath Pope.

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FLASHES AND PLUGS

GOING . . . GOING . . . GO-O-O-NE . . . What with all the innovations, and the adaptations to modern decor, which the telephone industry has met in such a versatile fashion, it is getting so that local citizens are performing a kind of count-down on what is outmoded.

Out Denver way, a *Post* columnist wrote one day that as far as he knew, only one person in the city, a Mrs. Will Hazelbush, had the "upstanding, pillar" type of telephone.

Following publication of this information, Ed Shelton, the reservations manager of Denver's Shirley-Savoy Hotel, said, in effect, "Pooh—we have three of them in one suite here. We call it the Capitol suite."

The two bedrooms, two baths and a parlor are all done in what is described as western Victorian style. There are oldtime round lamps with the Colorado crest (once used in the governor's office); there is a brass bed and a four-poster; and of course, there are the old-fashioned telephones, considered in character with the early 1900's.

•

'ROUND THE MULBERRY. The Illinois Bell *News* titled this one: "Delight of the PBX."

PBX: "This is Perkins, Potter, Parker and Potts, good morning."
Caller: "Is Mr. Potter there?"
PBX: "May I ask who is calling?"
Caller: "This is Mr. Sullivan's office, of Sullivan, Chadwick, Bicknell and Jones."
PBX: "Just a moment, I'll connect you."
Secretary: "Mr. Potter's office."
Caller: "Mr. Potter, please. Mr. Sullivan wants him."
Secretary: "Will you put Mr. Sullivan on the line, please?"
Caller: "Mr. Sullivan? Ready with Mr. Potter."
Sullivan: "Hello Pete? This is Joe. Okay for lunch? Good. See you."

•

A MATTER OF THE COMPASS: "I understand you people make connections for Paris."

"I'm afraid you have the wrong airline, sir . . . that would be either Trans-World or Pan American Airlines; they both have direct service to Paris."

"That's funny—the last time I went down there I used Braniff to Dallas and then connected there with Central Airlines. Paris is just northeast of Dallas a little ways." *The Braniff* (International Airways) *B Liner.*

•

SAME KIND OF ILLNESS? In Woodstock, Vt., the UPI reports, there is a telephone number that has an oddly appropriate, or inappropriate, connotation. The Ottauquechee health center in that city can be reached by telephoning No. 666.

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Department of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

May 7, 1960

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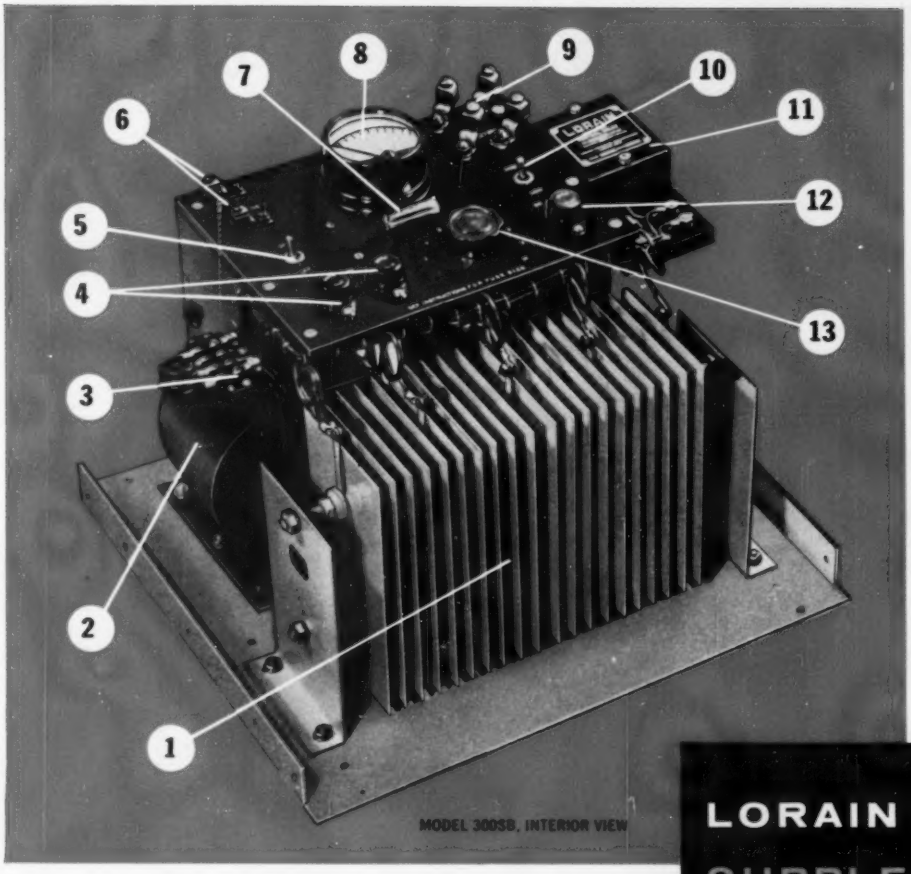

1. Selenium rectifier
2. Isolating transformer
3. Taps to adjust for A-C line voltage
4. A-C line fuses
5. On-off switch
6. A-C input terminals
7. Neon lamp to indicate tripping of overload relay
8. Output ammeter
9. D-C connections
10. Output range selector switch
11. Control relay, type FS1R
12. D-C load fuse
13. Tap switch

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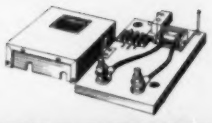

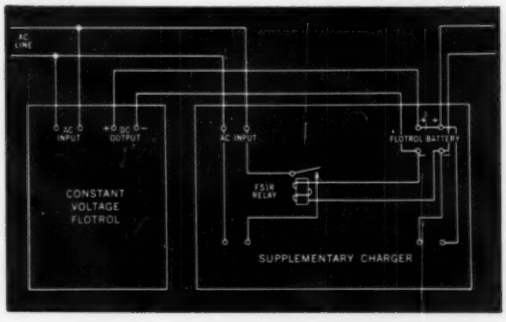

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And with Kellogg's *exclusive* repeaters, carrier system mileage can be doubled (using one repeater) . . . *tripled* with two repeaters . . . or *quadrupled* with three repeaters! You'll find, too, that Kellogg Carrier has more exclusive features and is priced lower than any other comparable system on the market.

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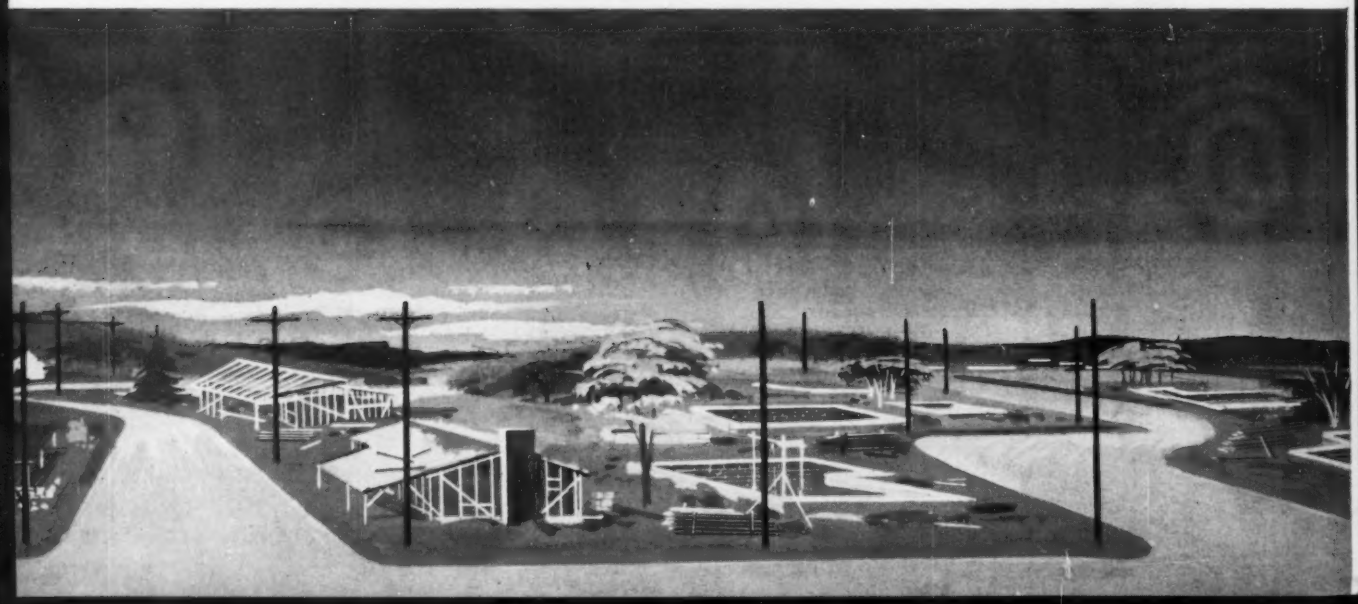

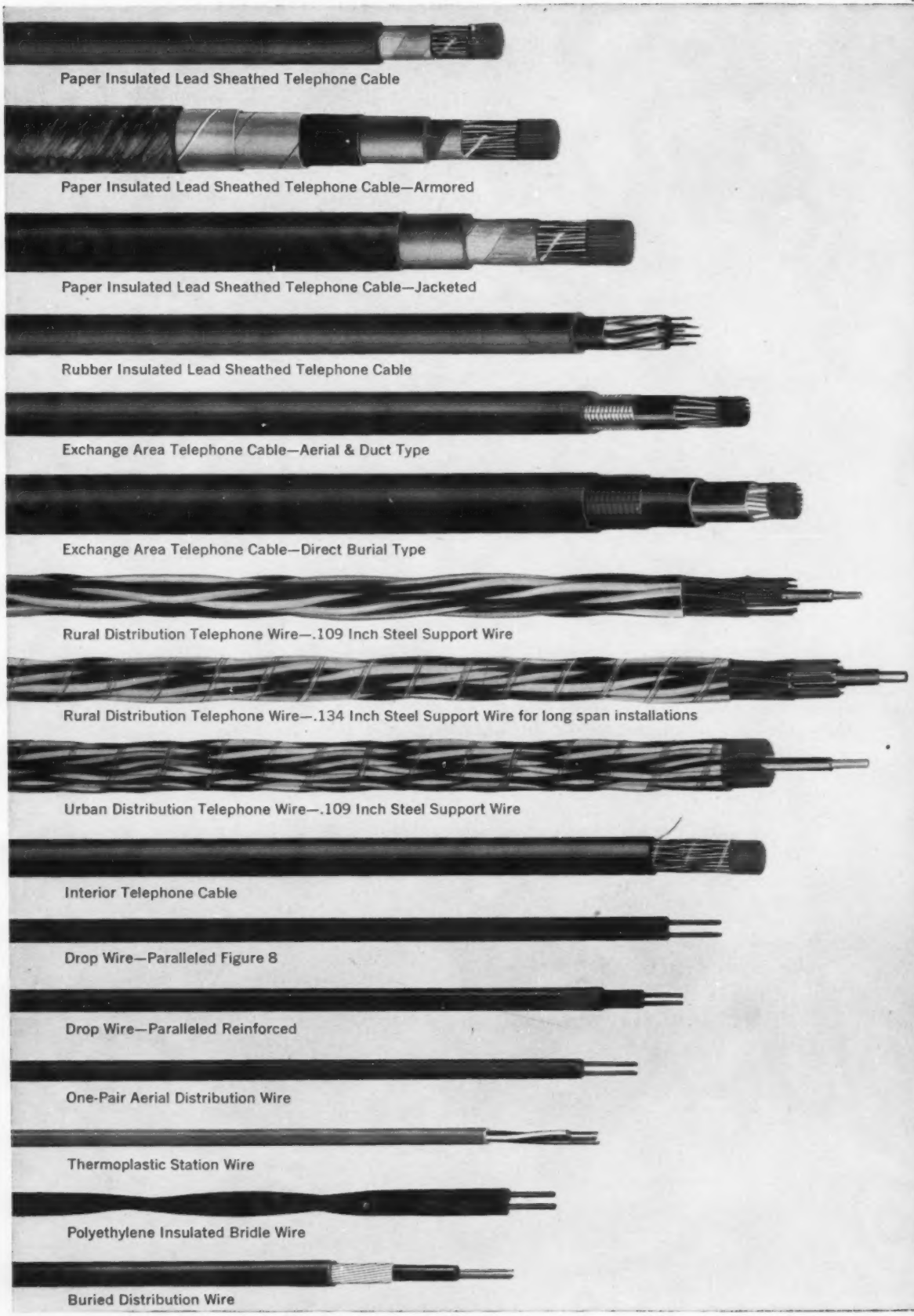

Paper Insulated Lead Sheathed Telephone Cable

Paper Insulated Lead Sheathed Telephone Cable—Armored

Paper Insulated Lead Sheathed Telephone Cable—Jacketed

Rubber Insulated Lead Sheathed Telephone Cable

Exchange Area Telephone Cable—Aerial & Duct Type

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Rural Distribution Telephone Wire—.109 Inch Steel Support Wire

Rural Distribution Telephone Wire—.134 Inch Steel Support Wire for long span installations

Urban Distribution Telephone Wire—.109 Inch Steel Support Wire

Interior Telephone Cable

Drop Wire—Paralleled Figure 8

Drop Wire—Paralleled Reinforced

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Thermoplastic Station Wire

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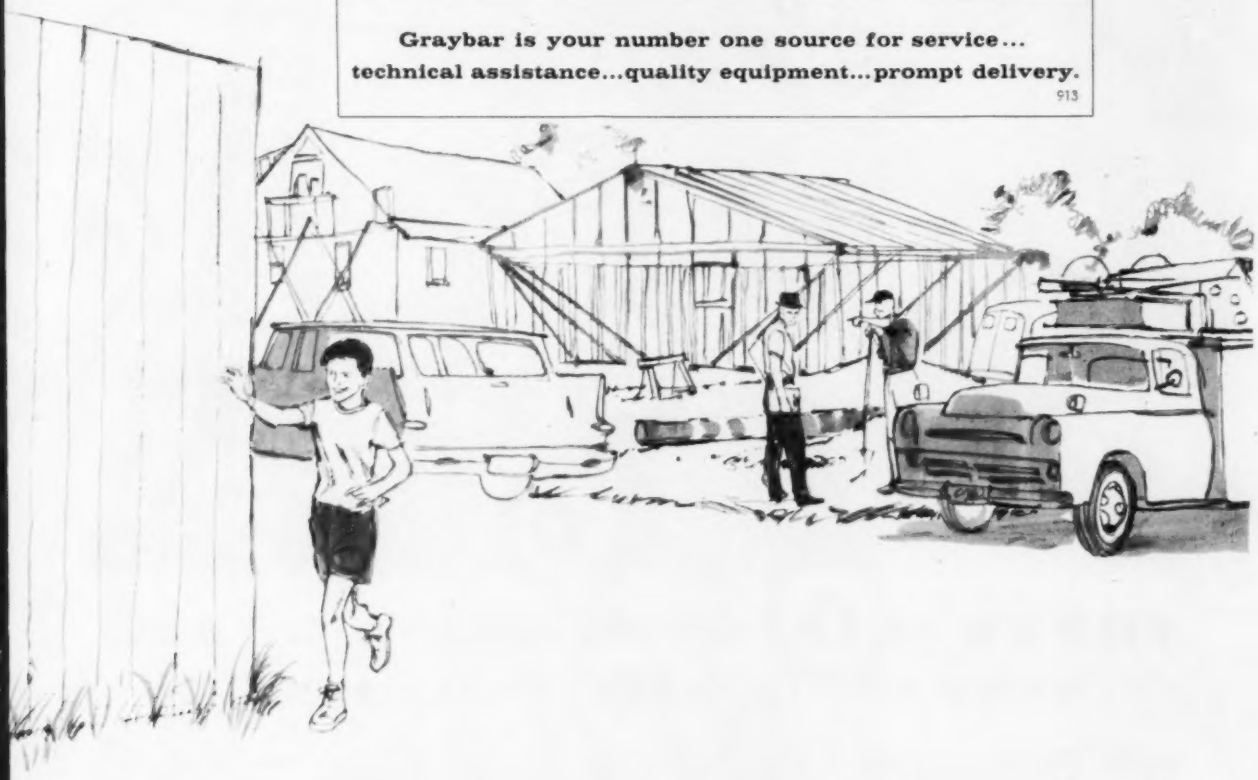

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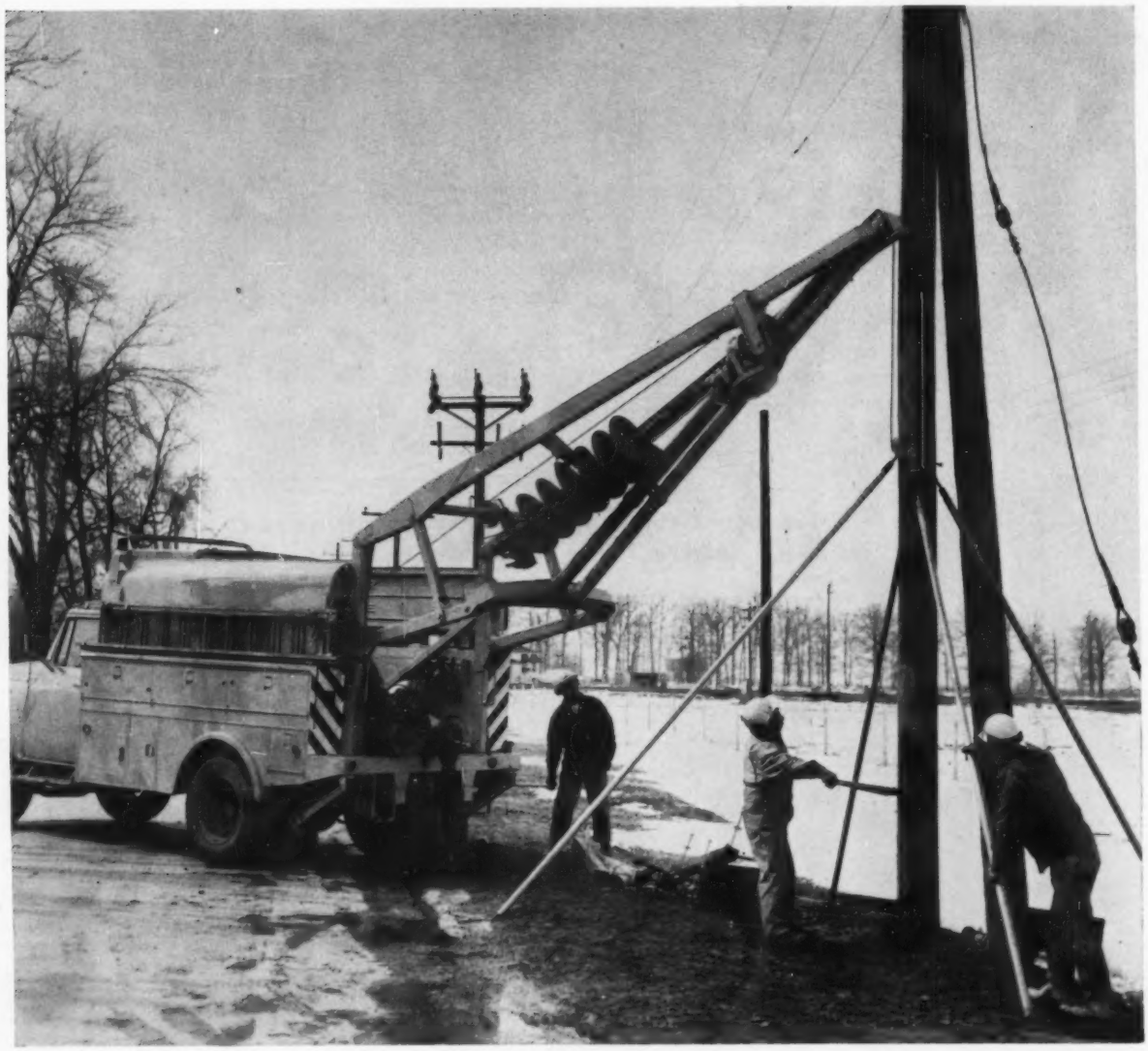

THREE MEN ON A WORKHORSE
save utility $900 in 10 days

Slashing $905.60 from a utility's construction and maintenance cost in a 10-day comparison period is no small accomplishment.

Yet it was easy. Holan's Three-Man Crew Unit went into the field and did the work of five men. Labor costs were drastically reduced—and two men were freed for other work assignments.

The three men used the spacious Holan CM-138 Line Construction Body equipped with a powerful, single-cylinder Model 25-C Derrick and 4401-H Earth Borer.

The five-man crew traveled in a line construction body with crew compartment. A two-legged derrick was used, but all digging was done manually.

The cost comparison was made on such jobs as setting, removing and loading poles, digging anchor holes, pulling butts and installing pole facilities.

Write today for more information on Holan's Three-Man Crew Unit—the body-derrick-digger combination that conserves manpower and saves you money.

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Sierra Model 125A

FREQUENCY SELECTIVE VOLTMETER

Model 125A is an all-new vacuum tube voltmeter incorporating features of several previous Sierra instruments in one compact, high-performance instrument.

Covering the frequency range of 3 to 600 KC, this new voltmeter has both narrow and wide selectivity settings plus a flat voltmeter position. This triple mode measurement capability makes the Model 125A an extremely versatile instrument for carrier measurements, wave analysis and general laboratory use. Brief specifications are listed at the side. For full information and demonstration, call your Sierra representative or write direct.

SPECIFICATIONS

Frequency Range
Tunable Mode: 3 KC — 600 KC
Flat Mode: 1 KC — 600 KC

Measurement Range
Tunable Mode: –90 dbm to + 32 dbm
Flat Mode: –30 dbm to + 32 dbm

Selectivity
Narrow: down 3 db 125 cps off resonance
down 45 db 500 cps off resonance
Wide: down 3 db 1.25 KC off resonance
down 45 db 5 KC off resonance

Construction
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Data subject to change without notice

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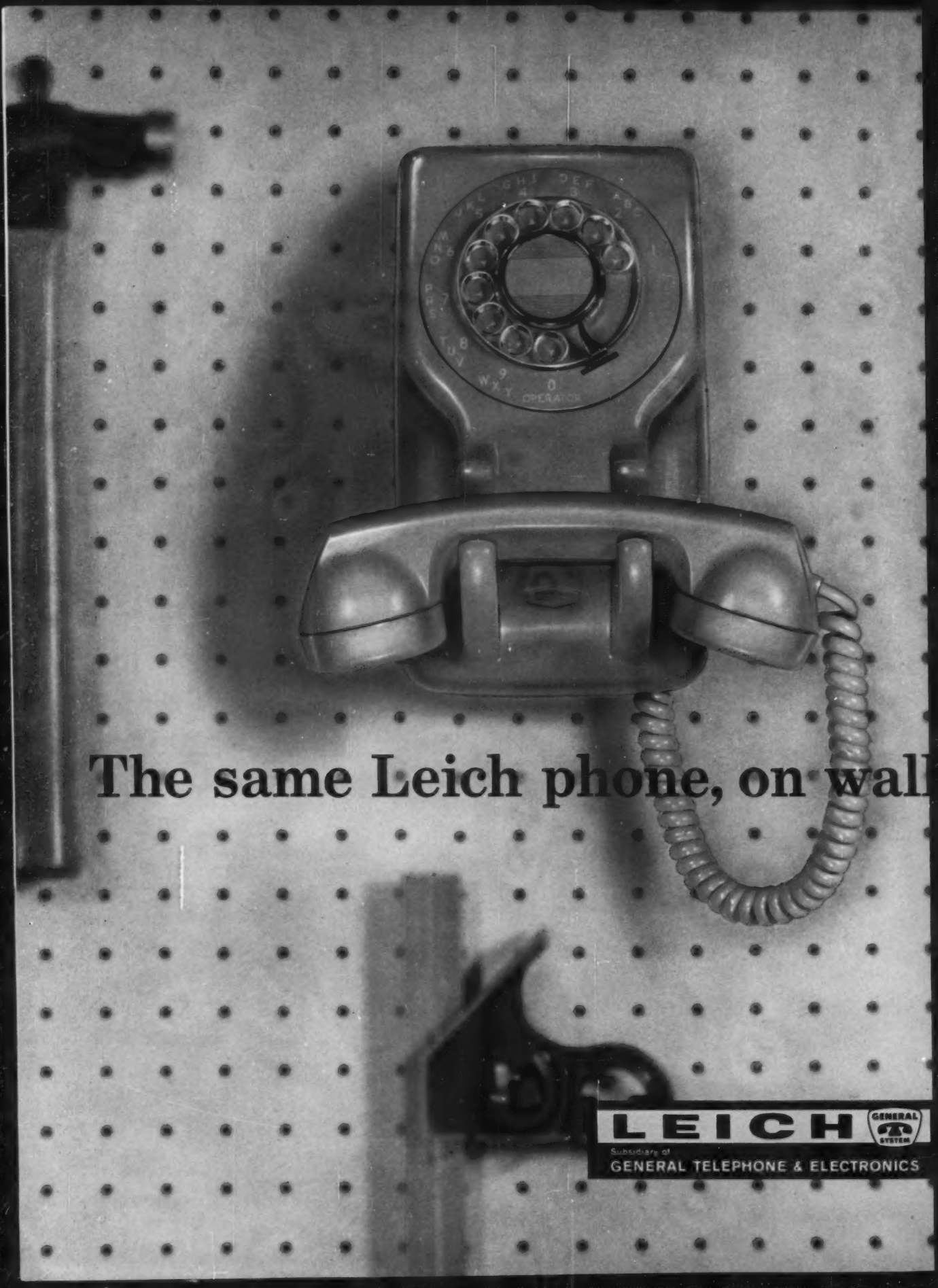
The same Leich phone, on wall
LEICH
GENERAL SYSTEM
Subsidiary of
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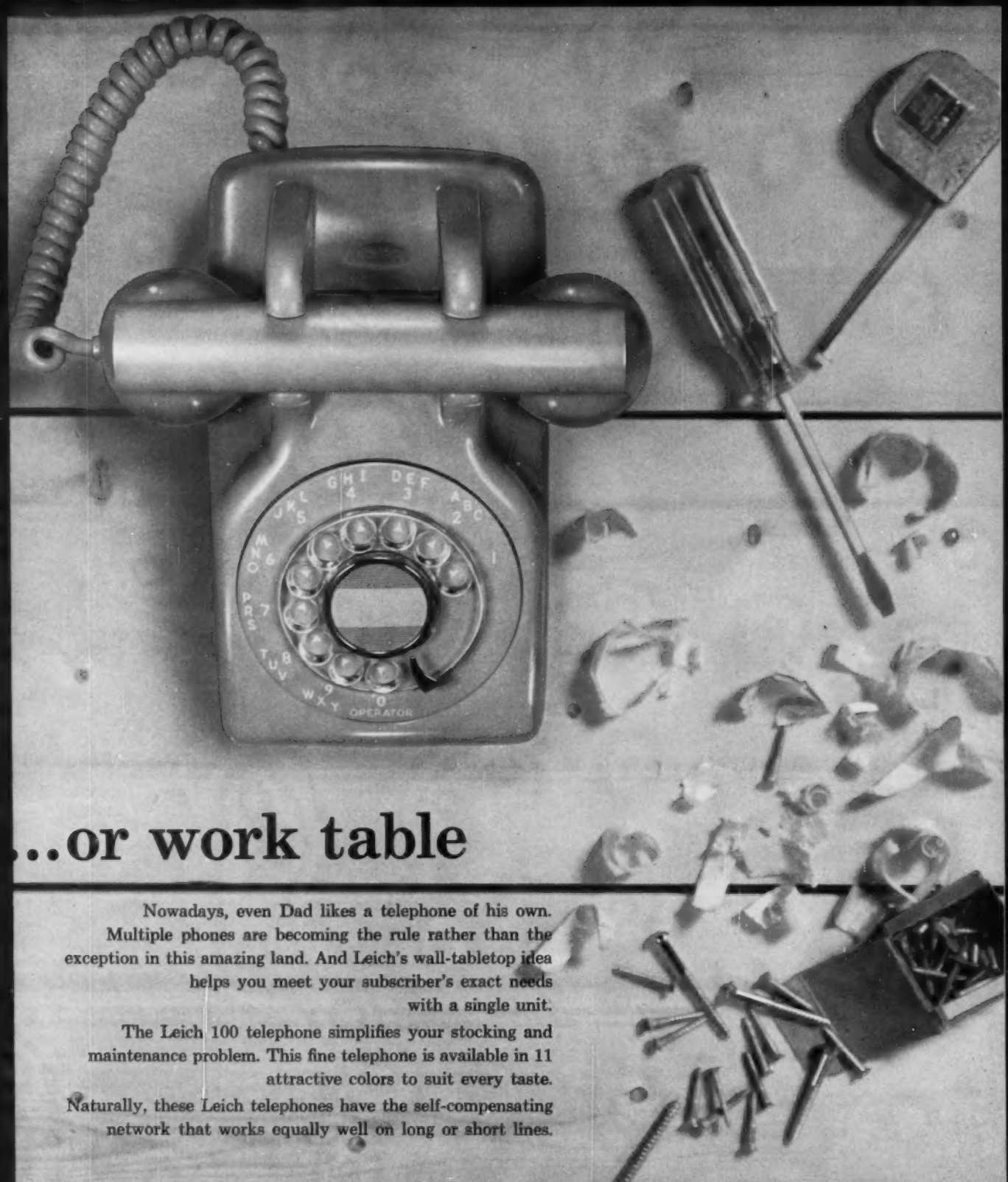

...or work table

Nowadays, even Dad likes a telephone of his own. Multiple phones are becoming the rule rather than the exception in this amazing land. And Leich's wall-tabletop idea helps you meet your subscriber's exact needs with a single unit.

The Leich 100 telephone simplifies your stocking and maintenance problem. This fine telephone is available in 11 attractive colors to suit every taste.

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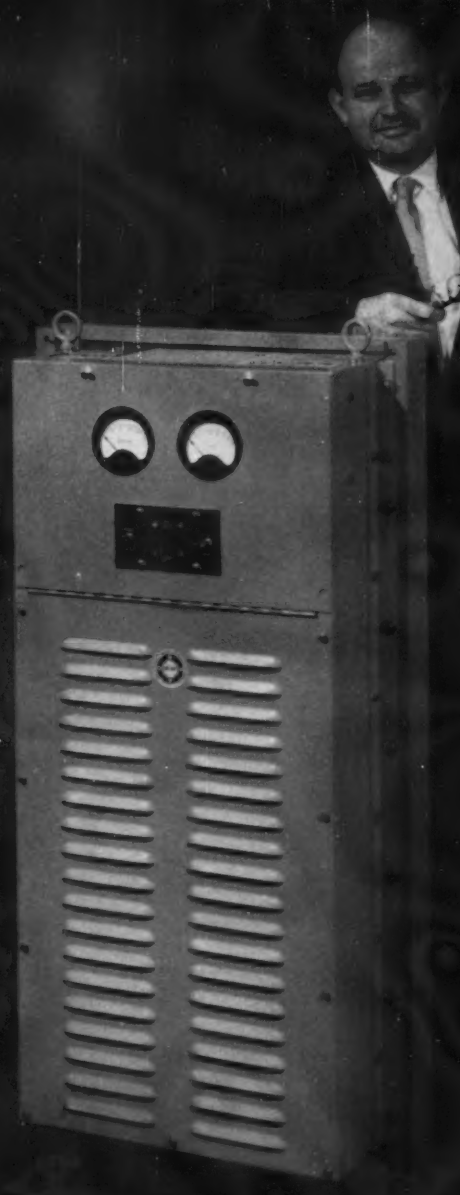

The best things (including battery chargers) come in smaller packages these days

The Warren 48 TFR 100 shown here occupies one third the space, packs just a bit more than half the weight of other battery chargers of equal rating (100 amps).

That's what semi-conductor design does for the modern telephone exchange these days. Gives you an automatic, full float, silicon type battery charger that's more compact, lighter, easier to install, and positively *frugal* on floor and rack space.

Now, ordinarily we might be tempted to add that — together with this space saving feature — you get equal performance and life as compared with other battery chargers.

But, strictly speaking, that's not true. In terms of performance and life, Warren TFR's are not *equal* to other battery chargers.

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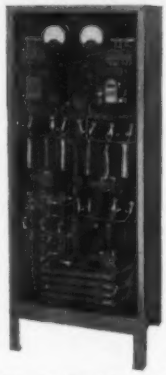
Let us send you full information.



Compact, transistorized, field-proven Warren TFR's are available in a full range of current ratings in 24, 48, and 130 volt models. Illustrated: 48 TFR 100 with cover removed.

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

NASA "talking moon" may eventually change the face or structure of world-wide communication patterns. Points to customer confusion when utilities use name of city in their name. . . . One electric company found many subscribers thought it was city owned.

ON APR. 28 American Telephone & Telegraph Co. President Frederick R. Kappel gave the second of a series of three McKinsey Foundation Lectures to the Columbia University Graduate School of Business. It is noteworthy that Mr. Kappel, in speaking of "Goals That Build the Future," stressed the goal of "good, cheap, fast, world-wide telephone service." This entailed technical knowledge and research, the establishment of a single interconnected service, the acceptance by the telephone industry of a sense of public service obligation, and the acceptance of regulation, etc.

Perhaps sooner than anticipated by many in the telephone industry, its dedication to these goals may be tested on all three fronts: Technical, legal, and economic. It is on the first point, however, that an event was scheduled to take place on May 5 at Cape Canaveral, within a few days after these lines are written, which may eventually change the face if not the structure of our world-wide communications patterns.

For that is the day which the National Aeronautics and Space Administration (NASA) was scheduled to launch its first "talking moon." Most readers of this department have already heard or read something about this. And by the time these lines appear in print it will be known whether the first attempt to orbit a space satellite, designed solely for communications relay purposes, was successful.

But whether the May 5 launching proves to be entirely successful or otherwise, it seems pretty well assured that sooner or later the United States Government will put into orbit a series of communications satellites rendering it possible for a "live" TV broadcast (which can now be seen only a few miles from the point of origin, without land wire or radio relays) to be seen instantly in all areas of the world. What comes out of this momentous experiment is bound to have a tremendous impact on the future of long distance, international telephony, and other communications operations.

Will it be a step towards good, cheap, fast, world-wide telephone service? If so, what will be the next step towards marking out the telephone industry's role and the extent of its participation in the use of satellites? Then, there are the questions of frequency allocations, as among nations and different industrial and government users of such frequencies, which the International Telecommunications Conference pondered at Geneva, Switzerland, last fall. And when the technical "know-how" of bouncing international telephone messages against an orbiting satellite as a relay to some distant part of the world is mastered, what will be the economic costs attributable to such operation? How will they compare or fit in with the present economic pattern and rate structures of conventional telephone business, and other forms of commercial communication service? All these questions lie in the future for solution. Yet the first communications satellite to orbit should surely set the minds and imaginations of telephone people astir, if they are not already stirring, over the portent of such truly historical and spectacular developments.

What was to happen at Cape Canaveral on May 5 is the fruit of long and careful research. But the space scientists and communications experts seem to have taken it for granted for some time that orbiting satellites for relay purposes would arrive sooner or later.

The Cape Canaveral launching was to feature a balloon-type satellite as tall as a 10-story building, flung into orbit after inflating some 1,000 miles above the earth. Such a huge lightweight satellite will serve as a type of reflector against which radio signals can be bounced back and forth among stations on the earth. Eventually, such objects also will provide ready television communications to all parts of the earth.

The Echo sphere, when inflated to its full 100-foot diameter, would be by far the biggest object ever placed in orbit. Such a sphere would be visible to the naked eye at dawn and dusk, as a light traveling across the sky. NASA Administrator T. Keith Glennan said that at 1,000 miles altitude, the sphere would be brighter than the North Star. NASA said the satellite will be launched at a time of day that will assure that the sphere, made of highly reflective aluminum coated plastic, will remain in continuous sunlight for about two weeks.

The United States announced its satellite launching date well in advance. This is evidence of the confidence American space scientists have acquired in the light of recent successes. Once in orbit, the satellite was intended to pass over all countries between 50 degrees north latitude and 50 degrees south latitude—most of the populated parts of the earth except Canada, Alaska, and northern Europe. It was

planned to circle the earth about once every two hours.

The 135-pound sphere was scheduled to be folded into a magnesium container 26½ inches in diameter to be launched by a three-stage Delata rocket. This would consist of a Thor missile first stage, and upper stages developed initially for the Navy's Vanguard satellite program. Residual pockets of air in the sphere would cause it to start to inflate after it is ejected from the container into the vacuum of space. Then a bag inside the sphere would be punctured, 30 pounds of power expanding so that the satellite would fill out to its full shape. This technique has worked successfully in four preliminary test launchings of the giant spheres from Wallops Island, Va.

Competition on Intra-System Business

Not all of the competition which the telephone industry faces in the future is out of this world, or off in space. Again quoting AT&T President Kappel (in his address to his company's annual stockholders' meeting Apr. 20), "While space may well widen the future areas of competition in our business, we are no less alert to the fact that there is already plenty of competition close to the ground."

Just by way of underlining that business competition, news recently came of a five-year contract between General Electric Co. of Schenectady, N. Y., and the New York State Police. As a result of this, General Electric stands to walk off with a nice piece of communications business, hitherto handled by the New York Telephone Co. Under this contract, General Electric will provide a "complete mobile communication service" for an estimated outlay of about 1.2 million dollars for the duration of the contract.

Communications for the New York State Police under contract with the New York Telephone Co. had to be discontinued this year on the basis of the terms of the anti-trust consent decree by which the U. S. Justice Department discontinued its suit to divorce Western Electric from the Bell System. The decree was entered early in 1956, but existing contracts were permitted to run on for a few more years. This meant that the New York State telephone mobile communications service was up for grabs. When bids were asked early this year, the state of New York decided that it would not own or purchase or acquire its own radio communications equipment, etc. But it did decide to lease a complete radio communications service similar to that provided by the New York Telephone Co. General Electric and others bid for that contract, and the Schenectady electrical manufacturing concern made the grade.

By coincidence, the Bell System managed to pick up an important new industrial automatic communications customer—Kaiser Industries Corp. This new business involved an investment by the Bell companies of 2 million dollars to serve a network for 64 Kaiser offices in 27 states, including Washington, D. C., and the Kaiser Center located in Oakland, Cal.

The announcement of an automatic private teletypewriter communications system capable of serving a city the size of Minneapolis was made in Oakland on Apr. 26—the date the system went into operation for the affiliated Kaiser companies. The new Kaiser system was designed to bring the entire diversified facilities of the industrial organization within minutes of each other for high-speed processing of business messages, sales orders, and production reports. The system incorporates a 27,000-mile grid of private lines capable of transmitting more than half-million words in an eight-hour workday, and connects, via other teletypewriter and cable facilities, with Kaiser locations in 21 foreign countries. It is expected that the system will carry more than one million individual messages a year in the course of these business transactions.

The Kaiser industry set-up is a fully automatic system with no manual intermediate relays, retyping, or switching of messages. It took two years to install. Two automatic switching centers are located at Oakland and Chicago, whose function is to direct and control all traffic on the system. Messages prepared by an operator on perforated tape are transmitted automatically and received at their destinations automatically in tape form. Equipment at the switching centers automatically "reads" the tapes and sends them to their proper destination. An incorrect code is automatically rejected and redirected to the proper location, thus making it virtually impossible for a message to become lost in the complex.

Watt's in a Name?

Two weeks ago, in this department, your correspondent had a little fun with the study of names and the problem of the telephone industry in retir-

(Continued on page 61)

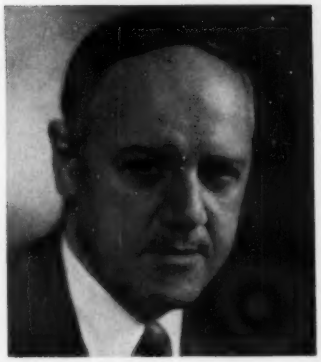
Recent Quotations of Independent Telephone Stocks

	4/29/60 BID	4/29/60 ASKED	4/1/60 BID	4/1/60 ASKED	Current Indicated Dividend Rate
Anglo-Canadian Tel. Co.	42¾	43¾	33½	34¼	$1.20
British Columbia Tel. Co.	44¾	45½	44¾	45¼	2.20
California Interstate Tel. Co.	13¼	13⅝	13½	14	.70
California Pacific Utilities Co.	18¼	19	19¼	20	.90
California Water & Tel. Co.	26¾	27¼	26⅝	27	1.28
Carolina Tel. & Tel. Co.	37½	39	37½	38½	1.60
Central Tel. Co.	20⅞	21⅜	21¼	21¾	.88
Chenango & Unadilla Tel. Corp.	25½	27	26½	27½	1.35
Cincinnati & Subn. Bell Tel. Co.	89½	90½	90	91	4.50
Citizens Utility Co. "A"	13⅝	14	13⅞	14¼	Stock Div.
Citizens Utility Co. "B"	12¼	12⅝	12	12½	.52½
Commonwealth Tel. Co.	20	20¾	20	20¾	.90
Florida Tel. Corp. Class A	29	30	27	27¾	1.00
General Tel. & Elec. Common	82 Close		77⅞ Close		2.28
Hawaiian Tel. Co.	21¼	22	20	20¾	1.00
Indiana Tel. Corp.	22	24	22	24	
Inter-County Tel. & Tel. Co.	70	74	63	68	2.00
Inter-Mountain Tel. Co.	15¾	16¼	15¾	16¼	.80
Lincoln Tel. & Tel. Co.	60 Bid		63 Bid		2.60
Middle States Tel. Co. of Illinois	25¼	26¼	25	26	1.00
North Carolina Tel. Co.	1	1⅛	1¼	1½	
Northern Ohio Tel. Co.	49½	52	50	53	1.60
Peoples Tel. Co.	92 Bid		85 Bid		4.00
Rochester Tel. Corp.	24⅛ Last Sale		25⅛ Last Sale		1.00
Southeastern Tel. Co.	21¼	22	20½	21½	.90
Southern Nevada Tel. Co.	21½	22½	20½	21½	1.00
Southern New England Tel. Co.	44¼	44⅝	44⅝	45	2.20
Southwestern States Tel. Co.	24	24½	23⅛	23½	1.20
Tel. Service Co. of Ohio Class A	165 Bid		150	155	1.90 + Stk.
Tidewater Tel. Co.	25	27	25	27	1.40
United Utilities, Inc.	41½	42	39	39½	1.40
West Coast Telephone Co.	24½	25	23½	23⅞	1.20
Western Light & Tel. Co., Inc.	42¼	43	41½	42½	2.00
Western Utility Corp.	7¾	8⅛	7⅜	7¾	.36

(Quotations supplied by Merrill Lynch, Pierce, Fenner & Smith)

today's Highlights

of finance-taxes-business trends



by Willard F. Stanley

BOND PRICES REVERSE PREVIOUS TREND: Once again fiscal policy of the federal Treasury has adversely affected the market for long-term bonds. For nearly three months, bond prices had been rising and yields on new funded debt issues of utilities had registered a moderate but continuous decline.

Early in April, a triple "A" rated issue was brought to market at about a 4.62 per cent yield. A double "A" rated issue was, at about the same time, offered on a 4.7 per cent basis, but this had the benefit of a higher price due to waiver by the issuing company of its redemption rights for purposes of interest saving for five years. A double "A" rated issue without any redemption restriction was offered at somewhere near the same time on a 4.85 per cent basis. All of these yields were considerably below the yields prevailing at the beginning of 1960 and were measurably below yields for new offerings as late as March.

Later in April, the Treasury brought to market, for the first time in well over a year, a long-term (25-year) maturity on a 4¼ per cent basis. 1.5 billion dollars of this issue was offered for subscription and expectations were that a minimum of 500 million dollars would be taken up. Actually only 360 million dollars were subscribed.

Competition of even this reduced amount in the long-term funded debt market resulted, as it uniformly has in recent years, in a rise in bond yields for utility securities. It had been hoped that the "overhang" of long-term federal debt offerings had been eliminated, at least temporarily, by the dual conditions that Congress would not act to raise the 4¼ per cent ceiling on more than five-year federal maturities and that federal obligations of such longer maturities could not be marketed (except at a wide discount) at the 4¼ per cent interest level.

However, improvement in bond yields experienced since the first of the year brought the yield on long-term federal securities to below the 4¼ per cent mark, thus apparently making it feasible to finance successfully long-term federal debt at that level. However, the added competition of the long-term federal issue weakened bond prices so that the new federal 4¼s were selling more than a point below par on Apr. 22.

Since the long-term federal offering, utility funded debt offerings have been at higher yield levels, the increase in yield probably averaging something like 0.15 per cent per annum to Apr. 26.

The same up and down "see-saw" occurred during the last month as to short-term interest rates, with 90-day Treasury bills falling to a yield well below 3 per cent early in April, only to swing back by Apr. 26 to around 3.3 per cent.

(Continued on page 22)

Mr. Stanley, formerly a utility financial executive, is now president of Corporate Services, Inc. of New York City and is well known as a financial writer. He is a member of the Controllers Institute of America and the New York Society of Security Analysts. He serves on the Finance Management Committee and the Tax Committee of the Controllers Institute (N. Y. Control). His articles are appearing once a month in TELEPHONY.

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Probably the improvement in bond yields since Jan. 1, 1960, had been somewhat "overdone" before the federal long-term offering. Under these circumstances the federal issue was sufficient to touch off a decline in prices. It seems doubtful, however, whether long-term yields will rise much from present levels. Nothing in the picture suggests departure by utilities from normal scheduling of offerings of their new funded debt, either by acceleration or deferral.

The Wall Street Journal tabulation shows for 13 new utility bonds, average bid prices at Apr. 22 representing a yield basis 3½ decimals (0.035 per cent per annum) higher than the yield based on average original offering prices of these securities. This is only a modest reversal of the trend shown by these tabulations one and two months previous, which reflected, respectively, a 10- and nine-decimal drop in yields on the basis of then-current bids.

The new figures probably reflect a number of issues which came to market while prices were still near the top. This seems confirmed by the fact that prices of eight of the new issues are lower and five higher than the original offering prices.

* * * *

OUTLOOK FOR UTILITY COMMON STOCK ISSUES: Common stocks of utilities continue to hold at attractive price-earnings ratio levels to issuers, despite the relative weakness of the general stock market. A tabulation involving some 115 electric utility common stocks shows average price-earnings ratio for April was practically unchanged from Dec. 1959, i. e., 16.6, reflecting a money cost of about 6 per cent for new utility equity shares.

So the "green light" still continues to burn brightly for utility common stock issues and, except where substantial earnings improvement is to be looked for in the near-term future, offerings for equity money needs up to two years in advance would seem reasonably recommended.

* * * *

"SEE-SAW" IN STOCKS CONTINUES: The stock market continued its backing and filling largely unabated during the period from Mar. 22 to Apr. 26. The earlier portion of this period witnessed a moderate rally in average prices, followed by a decline in the last 10 days of the period which brought averages down to below those existing at the earlier date. The New York Times 50-combined-stock average was, at the close on Apr. 26, 12 per cent below the Dec. 31, 1959 figure--a decline from Mar. 22, 1960, of about 2½ per cent. At the later date this average was about one per cent under the figure for the 1958 year-end.

Refusal of the stock market to advance in 1960 seems to reflect the increasing "spottiness" of business and production statistics. Whereas there was almost universal improvement being registered and predicted as the New Year arrived, in the last 30 to 60 days a considerable number of thorns are being found among the roses. For instance, a recent New York Times story stated the home appliance field was being plagued by price cutting and large wholesale and retail inventories.

Still, there seems no reason to believe that business in general is not likely to persist at a favorable rate of activity.

Favorable comparisons in statistics on consumer spending, gross national product, total personal incomes, etc. all point in that direction. But the year-beginning enthusiasm now seems lacking, even though actually such items as home construction and industrial expansion seem likely to exceed estimates at Jan. 1, 1960, the former being assisted by lowering of mortgage interest rates.

* * * *

TAXATION: Some form of increased social security taxes on employers seems likely within the next year or two to provide for the apparently enhanced popular demand for assistance to the elderly as to hospitalization and medical costs. It seems probable both major parties must espouse this cause, although a Democratic solution of the problem would no doubt carry a higher cost in additional taxes. Such an increase in taxes could take the form either of an increase in rate or in the maximum amount of wages taxed, or both.

The Potential Market for

Telephone Answering Devices in the Service Industries

By ALEXANDER I. WARRINGTON*

THIS IS THE tenth installment of Mr. Warrington's article presenting statistics on the so-called service industries, by regions and states, which constitute a big potential market for telephone answering devices. The statistics given in this series should be of value to market analysts in telephone companies and those in charge of marketing telephone services.

The ninth installment was published in the Apr. 30 issue. REGION IX. Pacific —Washington, Oregon and California.

The first installment appeared in the Mar. 5 issue, covering REGION I. New England—Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut.

The second installment covering REGION II. Middle Atlantic—New York, New Jersey and Pennsylvania was published in the Mar. 12 issue.

The third installment was published in the Mar. 19 issue, covering REGION III. East North Central—Ohio, Indiana, Illinois, Michigan and Wisconsin.

The fourth installment appeared in the Mar. 26 issue, covering REGION IV. West North Central—Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska and Kansas.

The fifth installment appeared in the Apr. 2 issue, covering REGION V. South Atlantic — Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia and Florida.

The sixth installment was published in the Apr. 9 issue, in which market data were presented for REGION VI. East South Central — Kentucky, Tennessee, Alabama and Mississippi.

The seventh installment appeared in the Apr. 16 issue. REGION VII. West South Central — Arkansas, Louisiana, Oklahoma and Texas.

The eighth installment was published in the Apr. 23 issue. REGION VIII. Mountain—Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah and Nevada.

REGION X. Alaska and Hawaii.

(See "Impact of Telephone Communications on Economies of the Various Geographic Regions of the U. S."—TELEPHONY, Sept. 12, 1959.)

Alaska

Total service units are believed to be as follows for 1960:

Type	*No. of Service Units*
Without payrolls	4,700
With payrolls	1,200
Total	5,900

In using the above information, market estimates for answering instruments are as follows:

Market	*Potential for Answering Devices*
Primary market	3,400
Secondary market	700
Total	4,100

This would reflect that all service units have an immediate and long-range potential of 69.4 per cent absorption for answering devices. It would also mean that 2.1 per cent of the entire population could eventually be served by answering devices.

Hawaii

Total service units for 1960 are believed to be as follows:

Type	*No. of Service Units*
Without payrolls	15,200
With payrolls	5,000
Total	20,200

In using the above information, market estimates for answering instruments are as follows:

Market	*Potential for Answering Devices*
Primary market	12,200
Secondary market	2,000
Total	14,200

This means that on both an immediate and long-range basis, 70.2 per cent of all service units could profitably utilize answering instruments. It would also mean that 2.2 per cent of the population would then receive the added service of answering instruments.

*Mr. Warrington is an Industrial Economist of Baton Rouge, La., and has authored many articles for TELEPHONY during the past several years.

T.O.P.*

Topics . . . *V-H system is easy and accurate*

By WINNIE B. BURNETT**

WHOEVER chose the name for the new method of measuring rate mileage really chose a scientific one. It is called the Vertical-Horizontal Coordinate System. Sounds like some major part of the Einstein Theory, doesn't it? Or, some very difficult crossword puzzle. Actually, the name is an excellent description of the method. The dictionary defines vertical as perpendicular to the plane of the horizon — upright. Horizontal means at right angles to the vertical. (TELEPHONY, Mar. 5.)

The rate experts prepared a map, or "grid," of the United States and Canada, and, in addition to the usual lines of longitude and latitude, it has a series of vertical and horizontal lines covering these two countries. Wherever one of the vertical lines crosses a horizontal line there is a pair of coordinates. These coordinates are used to distinguish one spot on the map from any other point. No two rate centers will have all the same rates; however, on calls to far distant places, the same rate mileage could apply within an area of 26 square miles—or even more—the greater the distance.

All interstate toll rates can be found easily and accurately using the V-H method since reference material is tailored to fit each rate center.

Rates for conference calls are determined by using the "Conference Mileage Table." If the mileage between one or more pairs cannot be determined from the "Conference Mileage Table," one can obtain the V and H coordinates and get the rate by means of the "Universal Difference Table."

The "Universal Difference Table" is used to determine a rate when an individual "Basic Rate Determination Table" for the calling point is not provided, as for toll stations.

A separate table, the "Rate Table U.S.-Canada Message Telephone," is used for calls to Canadian points.

The following examples outline the steps in determining the rate, using the V-H method:

1. *Rate Required to an Interstate Point.*
   (a) Refer to Operating Rate and Route Guide for the terminating exchange rate center.
   (b) Make a note of the V and H coordinates which are listed left of the exchange rate center name. (This V-H entry takes the place of the former rate block entry.)
   (c) Refer to the calling place's "Basic Rate Determination Table."
   (d) Scan down the V column on the left-hand side of the page for the V coordinate or *next larger* if the exact coordinate is not listed, and make a note of the adjacent *index* number which is listed to the right of the coordinate number. (Coordinates are listed numerically with the lowest appearing at the top of the page.)
   (e) Scan down the H column on the right-hand side of the page for the H coordinate or the *next* larger if not listed and make a note of the adjacent *index* number.
   (f) Refer to the "Rate Step Table —Interstate Message Telephone Schedule I."
   (g) Locate the *larger* of the two index numbers in the "L" (Larger) index column, and then in the associated box locate the smaller index number in the "S" column (or *next larger* if it is not listed.)
   (h) Use the rate step adjacent to the smaller index number.
2. *Rate Required to an Interstate Point from a Toll Station where an Individual Rate Determination Table is not Provided.*
   (a) Refer to Operating Rate and Route Guide for the *originating* exchange rate center.
   (b) Get the V and H coordinates and make a note of them.
   (c) Follow the same procedure and get the coordinates for the *called* place.
   (d) Subtract the *lesser* V coordinate from the greater V coordinate and make a note of the difference.
   (e) Subtract the lesser H coordinate from the greater H coordinate and note the difference.
   (f) Refer to the "Universal Coordinate Difference Table" and locate the index numbers associated with the V and H coordinate differences (or *next larger* figure.)
   (g) Then refer to the "Rate Step Table," following the same procedure as outlined in example 1, g., above, to secure the proper rate step.
3. *Rate Required to a Canadian Point.*
   (a) Refer to the Rate and Route Guide for the called point (exchange rate center.)
   (b) Make a note of the V-H coordinates.
   (c) Refer to the calling place's "Basic Rate Determination Table." Locate the V coordinate or *next largest* number and note the associated index number. Follow the same procedure for the H coordinate.
   (d) Refer to the "Rate Table U.S.-Canada Message Telephone Schedule II."
   (e) Locate the larger of the two index numbers in the "L" column. Then locate the associated smaller index (or *next larger*) and use the rate adjacent to this number.
4. *Determine any Other Line Charge in the Usual Manner.*

So you see, the new method *is* accurate and as simple as 1, 2, 3. One—get the V and H coordinates, two—get the index numbers, and three—get the rate step.

The Vertical-Horizontal Coordinate System is the most accurate plan ever devised to determine distances. It provides faster, more accurate quotation of rates and it improves rate and billing information. It gives better service and improves economy.

*Traffic Operating Practice.

**Mrs. Burnett is Traveling Chief Operator of Southwestern States Telephone Co. of Brownwood, Tex.

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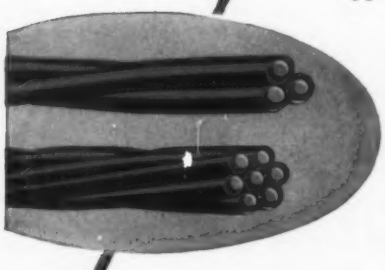

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TYPE M STRAND LASTS AS LONG AS THE POLE IT SUPPORTS

Summing Up Good PBX Service

By GILBERT R. BRACKETT

A PBX OPERATOR'S prime duty is to attend her switchboard. When she is harassed by non-operating duties which interfere with quick handling of calls which appear on her switchboard, she has a tendency to cut corners or become irritated, either one of which hurts service.

Answering a signal calls for the undivided attention of the attendant. She cannot be occupied as a secretary, looking up numbers for an extension user, typing, opening mail or taking care of the other duties some managements foist upon her, and still do a good job of operating.

Interest in Job

An operator's success as an attendant of a busy PBX switchboard depends a great deal upon her interest in her job. Most attendants want to be happy and satisfied with their work.

Above photo shows Donna Rice (right), PBX Service Adviser of California Water & Telephone Co., instructing Noreta Stewart, operator for a Hot Springs, Cal., PBX customer.

They want to do a good job of operating. They have the responsibility of giving the customers of their employers and extension users accurate, courteous and fast service. They cannot do this if they are plagued by little off-normal duties that disturb them.

We know that all PBX attendants cannot be top performers. Each person is different from another. It must be recognized that people do not react to a situation in the same manner, in fact each person will react to an identical condition differently, depending upon their mood.

An attendant must be alert to the

reactions of her customers. She must be patient and understanding. It should not always be necessary for her to stick to prescribed practices or phrases, if through nonobservance she can better convey her meaning to the customer.

Equal Treatment to All

It is true that it is much easier to get along with some people than with others. That is human nature. Some people seem to attract friendly feelings, while others have to force themselves to be agreeable. Because there is this difference in the way people affect each other, an attendant may speak in a more friendly manner to one customer, and treat the next one in a formal, distant fashion. It will help the attendant to give equal treatment to all who use her service if she will try to picture each customer that calls her switchboard, and be interested in him as an individual. It is an obligation of the PBX attendant to treat all people who call the company in the same manner. It may take a little effort to be pleasant to some, but the attendant cannot afford to let a caller feel that he has not received the best service possible.

A good operator watches the little things that may not be so little to the person calling. She is alert and careful in speech and actions and makes a sincere effort to be courteous and fair to each and every one who calls her company. She may slip at times, but when she does she will be forgiven because of her courteous service in the past.

Convention Calendar

1960

Association	*Date*	*City*	*Hotel*
Wisconsin	May 10 and 11	Milwaukee	Plankinton House
Illinois	May 19 and 20	Springfield	Abraham Lincoln
Kansas-Missouri*	May 23 and 24	Kansas City	Town House
Pennsylvania	June 6, 7 and 8	Bedford	Bedford Springs
California	June 8, 9 and 10	San Francisco	Fairmont
Washington-Oregon*	June 16 and 17	Portland	Sheraton Portland
New York	June 20, 21 and 22	Schroon Lake	Scaroon Manor
Alaska	Aug. 15, 16 and 17	Sitka	Elks Club Rooms
Tennessee	Sept. 7 and 8	Nashville	Hermitage
Arkansas	Sept. 12 and 13	Hot Springs	Velda Rose Motel
Michigan	Sept. 12 and 13	Mackinac Island	Grand
Rocky Mountain	Sept. 14, 15 and 16	Denver	Hilton
West Virginia	Sept. 19, 20 and 21	Morgantown	Morgan
Nevada	Sept. 21, 22 and 23	Ely	Nevada
New England	Sept. 25, 26, 27 and 28	Bretton Woods, N. H.	Mt. Washington
North Carolina	Oct. 3 and 4	Pinehurst	Carolina
USITA	Oct. 9, 10, 11 and 12	Chicago	Conrad Hilton
South Carolina	Oct. 24 and 25	Clemson	Clemson House
Virginia	Oct. 27 and 28	Roanoke	Roanoke
Oklahoma	Nov. 9 and 10	Oklahoma City	Skirvin
Georgia	Nov. 9 and 10	Atlanta	Biltmore
Alabama	Nov. 14 and 15	Birmingham	Thomas Jefferson
Florida	Nov. 28 and 29	Jacksonville	Robert Meyer

*Joint Convention

Need Encouragement

Certainly, a PBX attendant should do her work correctly and not expect a pat on the back every time she extends herself beyond a normal duty. And, yet, the average person does look for occasional praise and they esteem it highly when it is genuine. Everyone needs to be encouraged if they are to persevere and continue to do good work. That is how pride and satisfaction are built into a job. A PBX attendant is not a machine. An occasional plaudit will bring out the best she has to give. It convinces her that she is not being overlooked, that the company has her welfare at heart, when she performs at her best.

Ideas are given to a person through the means of speech. Through her voice an attendant can show her desire to be helpful and prove her sincerity. Using the right words saves time, conveys the proper meaning, and brings about greater efficiency. An operator must use skill in phrasing her thoughts. She must know the correct pronunciation of words and have a pleasing tone of voice. If she does select the right words to convey her meaning, there will be no misunderstanding and consequential confusion. A good vocabulary, a knowledge of the meaning of words in common use, and correct pronunciation are all a part of good speech. It is imperative that an attendant be able to express her ideas in such a way they are easily understood.

The ability to converse correctly is an asset in business as well as socially. It makes an impression on the people one meets over the telephone, or face to face. It is a must to good operating.

Have Enviable Record

PBX attendants have won an enviable reputation for their courtesies to customers. These little niceties of life have won the customer's admiration and respect and have made the attendant's work more pleasant and less tiresome. The plaudits these attendants receive are earned through sincere interest in people and consideration for their problems.

If a TV set is not tuned in properly one gets a poor picture reception. That is just as true of people. The more an attendant gives from her heart, the happier will be her relations with her customers. If an attendant honestly wants to do a good job, her heart will tell when she succeeds in doing so.

What is a PBX attendant's main objective? Isn't it to "give the most and best service possible?" How can she accomplish such an objective? First, she should be conscientious and have the will to do a good job. Second, she should be competent and cooperative. Third, and probably most important, she should believe in her company, its policies, its products, and recognize that to the calling party, she is the company.

It is important that the attendant know and understand the people who call her company frequently so she may rise to conditions or situations that call for diplomacy and careful handling. Every grain of wheat in a field, every star in the sky, is different and that is

(Continued on page 56)

Iowa Theme: "Sell and Serve in Sixty"

To Resist Competition

By Dianne P. Drucker

THE ABSENCE of a well-designed, closely-coordinated Independent sales program for the rural telephone market was noted by R. Parker Sullivan, vice president, marketing and sales, of General Telephone & Electronics Corp., speaking before the 65th annual convention of the Iowa Independent Telephone Association.

John J. McIntosh of Cedar Rapids, presided over the meeting in Des Moines on April 5 and 6, which had as its theme, "Sell and Serve in Sixty." A total of 748 delegates from 325 Independent companies in Iowa attended.

Sales and service go together, Mr. Sullivan said, because in order to serve the rural market, it must first be sold. "I am of the opinion," he declared, "that we are not selling it."

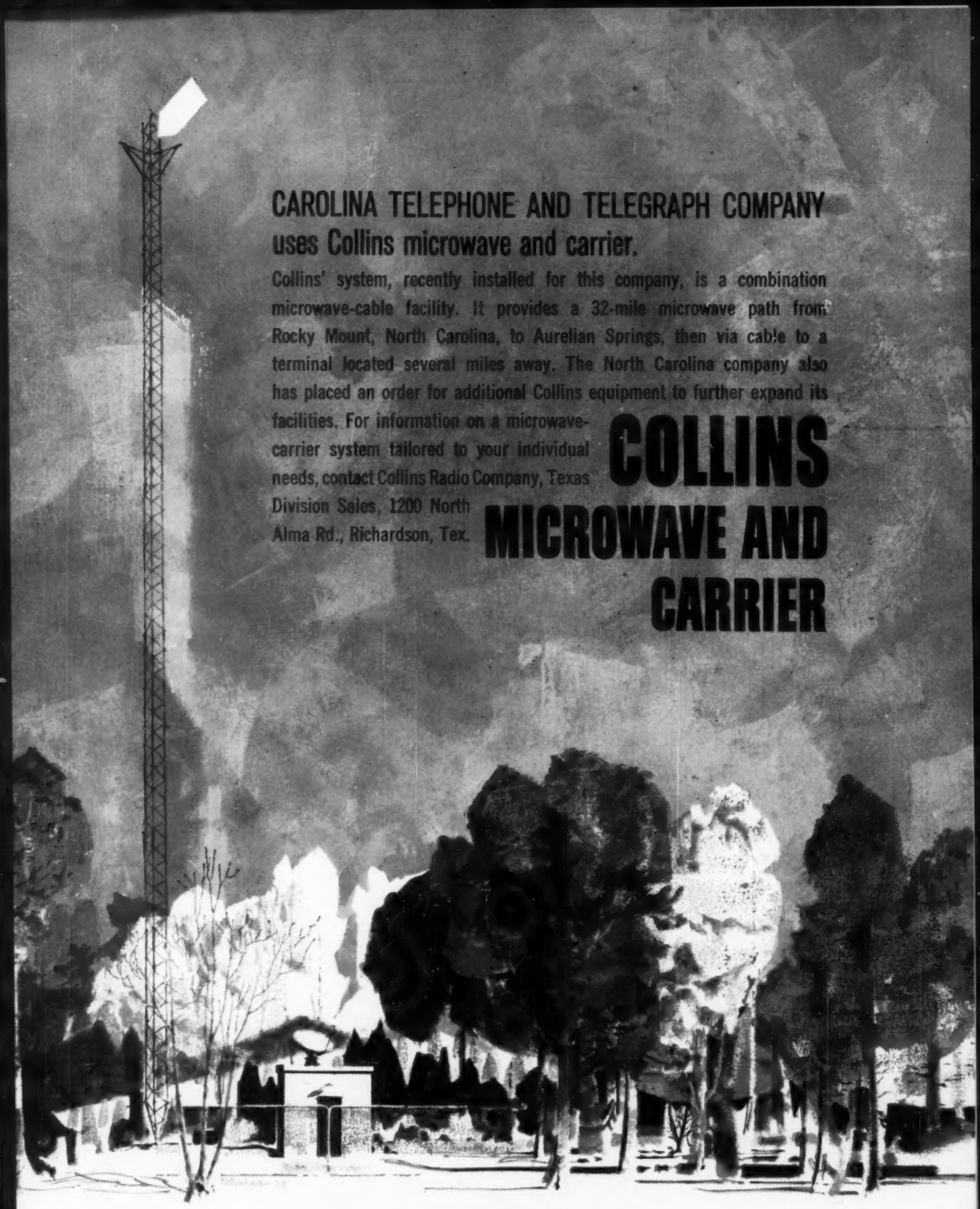
Waiting for designers and manufacturers to come up with improvements that will modernize rural communications is not enough, he said. The most logical approach, he suggested, is for "each one of us as operators of telephone properties to start now to generate additional revenue from our present rural market customers . . ."

Some of the reasons he gave for placing such importance on this segment of the market are its size, its growth potential, and the revenue and profit potential that it holds.

Speaking of the General System, Mr. Sullivan said that 18 per cent of all the

(Continued on page 33)

Directors and officers of the Iowa Independent Telephone Association are shown at their recent convention. Back row, left to right, are C. C. Pearce of Riceville; Gene Daubendiek of Jefferson; Kenneth A. Young of Ft. Dodge; A. W. Sanders of New London, first vice president; Ross K. Vernon of Sioux Center; Edward G. Carlson of Creston; Joseph L. Van Horn of Grinnell; Harold Thompson of Clear Lake, president; E. B. Zerwas of Manning, second vice president; L. E. Travis of Newton; W. F. Miller of Des Moines, executive secretary. Front row, left to right, are H. Filmore Melick of West Liberty; Howard Amick of Des Moines; V. D. Peck of Primgar; H. B. Melick of West Liberty; W. H. Fowler of Pella; H. Miller of Great Bend, Kan., Clyde McFarlin of Montezuma, and John J. McIntosh of Cedar Rapids.



CAROLINA TELEPHONE AND TELEGRAPH COMPANY uses Collins microwave and carrier.

Collins' system, recently installed for this company, is a combination microwave-cable facility. It provides a 32-mile microwave path from Rocky Mount, North Carolina, to Aurelian Springs, then via cable to a terminal located several miles away. The North Carolina company also has placed an order for additional Collins equipment to further expand its facilities. For information on a microwave-carrier system tailored to your individual needs, contact Collins Radio Company, Texas Division Sales, 1200 North Alma Rd., Richardson, Tex.

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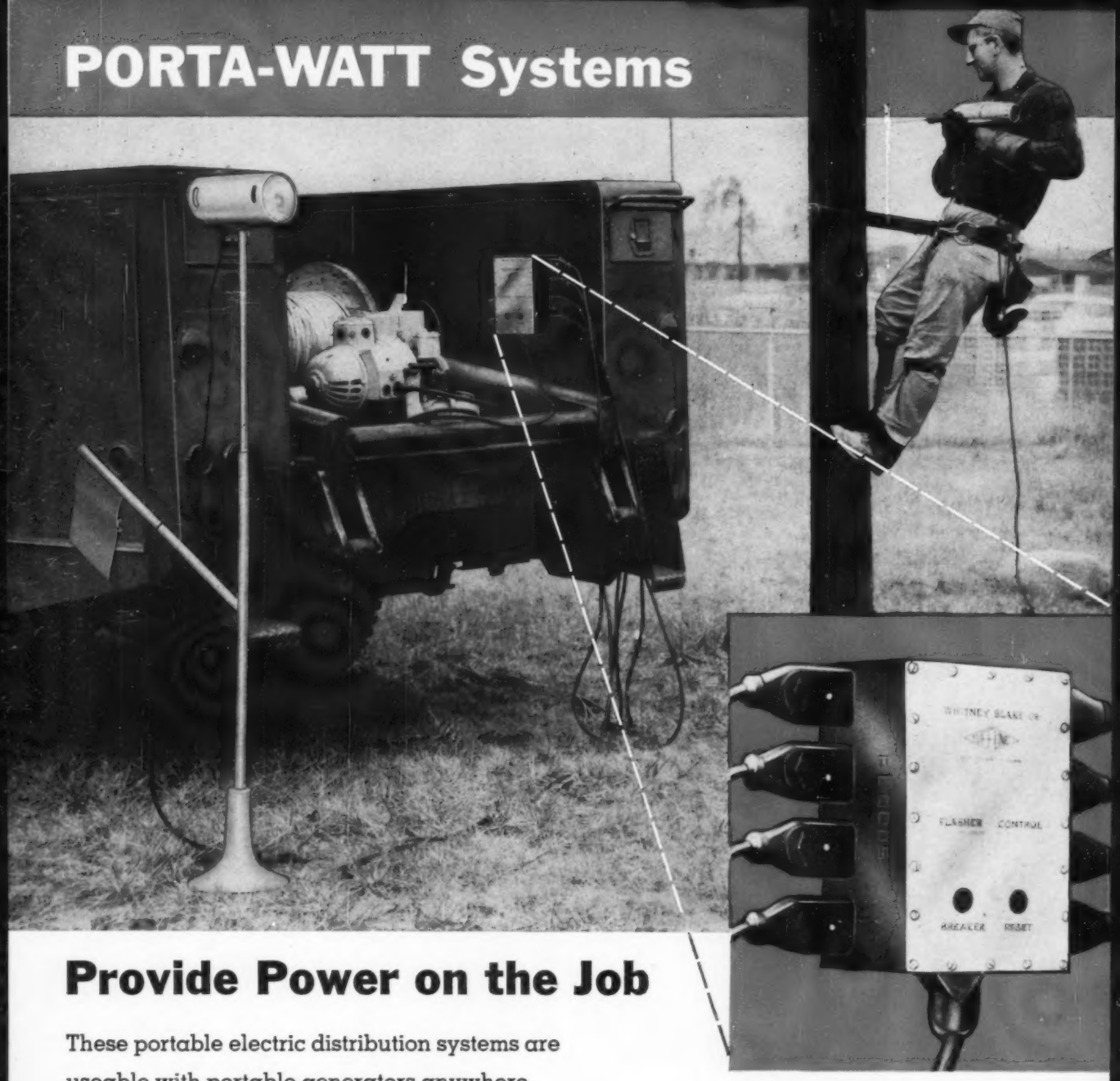

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primary telephones it serves are rural. In Iowa, rural subscribers of the General company represent 29 per cent of the total customer group.

Mr. Sullivan outlined a market study his company undertook to better understand the rural situation.

Beginning in 1956, test installations of complete communications systems were made on 46 farms located strategically throughout a five-state area—Iowa, Indiana, Illinois, Michigan and Wisconsin. Various types and sizes of farms were included, such as dairy, grain and livestock farms, ranging from only a few acres to more than 500 acres.

Test subscribers were allowed to use these completely integrated telephone facilities for approximately 32 months to give them an opportunity to evaluate the various services throughout the different seasons of the year. Every family member was requested to maintain detailed call data indicating date, time and nature of the call (either social or business).

Interviews of these test families were conducted by representatives of a large Midwestern university during the test period.

Results of the study showed, Mr. Sullivan said, that the average farmer is totally unaware of the different items of equipment and types of service available to him for improved communications. His idea of complete service is having a private line telephone someday. He does not think of the telephone company as a source of supply for any communications other than the basic telephone service.

How to correct this situation? Mr. Sullivan suggests:

Displays — at county fairs, grange meetings, rural gatherings.

Demonstration and discussion during displays, illustrating the benefits that will accrue to the farmer.

Test installations on one of the larger, more successful farms in the area on a free-of-charge basis.

Interesting county agents and university agricultural people in good communications.

At the present stage of his company's study, Mr. Sullivan says, he cannot enumerate everything the farmer needs and wants in communications. However, a few of the basic units that seem to have the strongest appeal, were named by him as follows:

Loud signalling device in work area immediately surrounding the farm house,

Extension telephone in barn or workshop,

Intercommunicating facilities between the residence and one or two other buildings.

Appearing as members of a panel at the Iowa association's meeting are, left to right, Edward G. Carlson of Creston, Frank Baird of Des Moines, Charles Byers of New London, Arthur G. Kiesling of Madison, Wis., and Ed McKean of Great Bend, Kan. Shown without a nameplate is Harold Thompson of Clear Lake, who acted as moderator.

The sales approach to rural subscribers must also be different, Mr. Sullivan stated. The farmer does not show any interest usually on the initial contact. It is, he said, "the second, third or maybe fourth contact when he becomes convinced that this isn't just an attempt to effect a single sale."

He also mentioned special sales programs such as the "Telephone Fair" which he says has been a valuable tool. He explained that a fair did not necessarily have to involve large investments, but was a title given to a well-planned, well-coordinated, well-executed sales program.

These efforts to sell the rural market, Mr. Sullivan indicated, will bring results identical with those listed on the USITA's marketing poster—"Marketing Means Additional Revenue, Improved Service and Increased Profits."

Mr. Sullivan predicted that if companies "do nothing now to alter (the farmer's) concept of where we fit into this over-all communication field, he will go elsewhere with his demand for additional communication facilities, and it will be furnished by someone else."

This warning was also given by Orla Moody, staff coordinator, Bell-Independent relations, of American Telephone & Telegraph Co.

In his talk, "The Cowboy, the Preacher, and the Artist," Mr. Moody said that many firms which operate over long distances, such as truckers, are considering the installation of their own long-distance facilities through the use of radio-relays.

At the present time, he informed the conventioneers, there are over 30,000 miles of private microwave systems—five times as much as all the private line service presently furnished by Independent companies.

To meet this challenge from outside, Mr. Moody suggested:

Long range plans for the integration of Bell and Independent facilities, procedures and practices.

Joint effort to develop the full market potential in the communications field.

Industry-wide solidarity in shaping a favorable public opinion and industry image, achieving understanding and fair attitudes on the part of legislators and commissions on matters of concern to the industry as a whole.

The magnitude of Independent companies' service was stressed by Mr. Moody who stated that their present rate of growth is faster than the over-all industry average. By 1965 or 1966, they will be serving as many subscribers as the Bell System did in 1940, he said.

Growth will make the 1960's the golden decade for the telephone industry, Foster B. McHenry of Jefferson City, Mo., president of the United States Independent Telephone Association, told the Iowa meeting.

"The decade on which we are embarking will require more stations, more plant facilities, more money for investment purposes and many more technical advances," Mr. McHenry said.

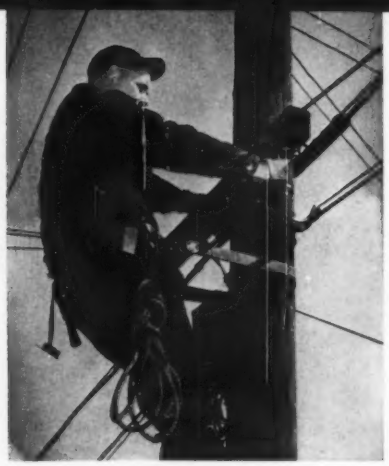
More young recruits and technical trainees, higher standards, more earnings and more investors, will all be needed.

He emphasized that the Independent telephone industry has grown to the point where it now has a plant investment of 3.5 billion dollars and operates nearly 11 million telephones in the United States.

Credit for some of this recent growth was given by Mr. McHenry to the influence of the USITA's national advertising program.

The state's progress was chronicled by William F. Miller, secretary-treasurer of the Iowa association, who stated that more than 500 Independent

(Continued on page 68)



THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

LATE last December, Rochester, N. Y., experienced a severe sleet storm of the type that causes strong telephone men to shudder—14-gauge line wire built up to cable diameter, then a strong breeze spelled disaster.

Several things combined to prevent the Rochester emergency from becoming a catastrophe. Underground cable is used by the Rochester Telephone Corp. for all inter-exchange trunks in the city, and for principal leads to main terminal junctions. In the suburban and rural areas, thermoplastic cables have largely replaced open wire. Just about the only telephone service lost was individual station service where a tree limb cut the drop wire as it fell. In a few instances, there were line interruptions, mostly associated with joint-use pole leads.

The smaller companies in the area were not so fortunate. Their problem has been to select which phase of a complete modernization program should be tackled first. The pressure to convert to dial, while at the same time meeting soaring demand for additional stations, meant that speed often took precedence over permanence in outside plant construction. Old pole lines came down like ripe apples in September.

It is a great satisfaction to note that a great part of new plant, even in rural areas, is presently going underground. The wire and cable plow is reducing the cost of this type construction in areas where soil conditions permit this type of construction. While the first cost of buried construction may be higher than aerial, the fact that it is safe from sleet and storms and can be maintained at a lower cost, causes it to prove a good investment in many areas.

•

The annual report of the Chesapeake & Potomac Telephone Co. of Virginia cites a net gain of 54,500 telephones for 1959. Only twice in previous years was a larger growth in telephones realized. The tax burden on each customer averaged $64.15 for the year. Over 37 million dollars (more than $142,000 every working day) was spent for new plant. Over 75 per cent of the households within this company's territory have telephone service.

•

Rain pants, of improved design that should prove ideal for linemen and other outdoor workers in foul weather, are now available.

Cut like slacks of soft, flexible vinyl medium heavy weight, these pants feature an adjustable, elasticized waist and snap fly front with reinforced crotch. Seams are superwelded by an exclusive electronic process to provide extra strength. Ample fullness is allowed for easy fit over regular clothing.

These pants can be matched with the same weight in jacket or parka to provide a complete weatherproof suit. Both garments are completely wind and waterproof and they keep the wearer dry and warm while working in the rain and cold.

The rain pants are available in two colors—safety yellow where high visibility is a must, and in olive green for general wear.

•

We were recently asked to specify the two most serious safety hazards in the telephone industry. This is a rather difficult question and no doubt there are a variety of good answers.

We believe that perhaps jointly used poles can be considered one of the most serious hazards since they do frequently cause accidents. Then, too, falls are the cause of most accidents and ladders cause a great number of falls.

We would appreciate the opinions of our readers as to what in their opinion are the two greatest safety hazards in the telephone industry.

•

The Pacific Telephone & Telegraph Co. has started a non-motorized PBX installation plan. With this plan, on complex installations that will require two or more days work for completion, the job is first surveyed by the installation foreman. He then orders all necessary material, equipment and tools. The supply force fills the order and delivers it to the customer's premises. Everything required to complete the job is delivered in advance.

The PBX installer's tools and miscellaneous material are delivered in two boxes especially designed for this plan. When the installer completes his work, he packs his tools and material in the boxes and moves on to the next job where another complete set is waiting for him.

The supply department picks up the tools and material at the old location and replaces parts that were used. The boxes are then ready for the next job.

It is claimed that, in addition to the obvious advantages, there are also definite savings in travel time and vehicle expense, improvements in merchandising and better public relations.

•

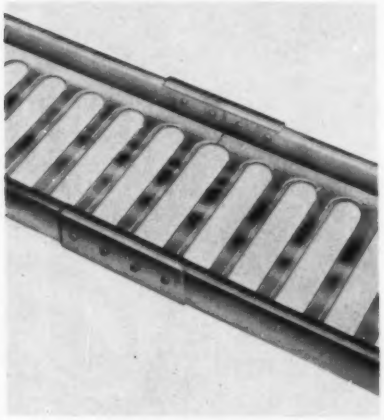
Warning flags are now available that are fabricated of long-lasting vinyl-bonded-to-nylon material. This new fluorescent flag is claimed to have extra brilliance at twilight or in hazy weather.

Flags 14 inches x 14 inches in size with grommets, equally brilliant on both sides, are available in rocket red, sunburst yellow, or snow white.

•

A new-type tray is now available for use to replace the conventional cable rack normally used to support cable runs between units of equipment.

This tray may be furnished in 1½-inch and 3-inch high sidewalls in galvanized steel and 3 inches high in



aluminum. The slot openings in the bottom of the trays are 2 inches wide with turned-down edges all around. Cables may be dropped out through one of these slots at any point in the run if required.

•

The records indicate that Bell System personnel are 10 times safer at work than employes in the average major industry reporting to the National Safety Council.

•

It is claimed that the American people are so tense that it is even impossible to put them to sleep with a sermon.

•

Crosstalk — Pneumonia is described as a slight cold handled by a public relations man.

Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. When communication lines may come into accidental contact with power circuits, is it necessary to provide special protection on the communication lines?

A. When jointly used poles accommodate both power and communication circuits or communications pass under power lines, it is most necessary to protect the circuits against accidental power contact.

In order to provide this protection, use should be made of available heavy duty power cross protectors that are factory-adjusted to have a nominal breakdown of approximately 3,000 volts, ac, root mean square.

These protectors are capable of operating the power circuit breakers. They employ carbon electrodes and will discharge in excess of 750 dc amperes for a period of 3 seconds. These units will also provide protection against severe lightning damage.

These protectors must, however, be connected to a good low resistance ground with a heavy ground wire. So often a 5-foot ground rod is simply driven into any type of soil and assumed to be a good ground. And, too often, this is not the case, with the result sometimes proving disastrous.

•

Q. Why should heat coils be required in central office protectors?

A. Heat coils are provided to protect central office equipment against damage from sneak currents. One type of heat coil is designed to carry .35 ampere for three hours and will operate within 210 seconds on .5 ampere in an ambient temperature of 68 degrees Fahrenheit.

•

Q. We'd like to know what type of cable you recommend for installation in underground conduit in a corrosive area?

A. It is suggested that you consider the use of approved plastic-jacketed cables. Cable may also be obtained with molecular weight polyethylene that can also be applied as a protective covering over lead-covered cables. Ordinarily, either type of cable will prove satisfactory for use in corrosive areas.

•

Q. Can you tell me why insulated joints are used in exchange cable distribution systems?

A. Insulated joints are required when it is necessary to interrupt the continuity of the cable sheath so as to protect against electrolysis or to provide special protection.

Insulated joints are not used as frequently at the present time as they were in the past.

•

Q. What diameter ground rod is considered best suited to ground protectors on telephone lines?

A. One recognized authority advises that the diameter of ground rods should be determined by the mechanical rigidity required for driving, as diameter has only negligible effect on the electrical characteristics of the ground. For example, rods of ½-inch and ⅝-inch nominal diameters will give practically the same electrical performance, if of the same length and driven in the same types of soil.

This is demonstrated on page 79 of the Bureau of Standards Technological Paper No. 108 in which comparative performance data are given, showing that ½-inch rods, although of 33 per cent greater weight than ⅜-inch rods, only provide 5 per cent lower theoretical ground resistance.

The resistance of any ground is largely determined by the conductivity of the surrounding soil and is dependent upon the soil ingredients and the moisture content. Deep grounds facilitate reaching permanently moist soils and provide lower resistance with less variation due to seasonal conditions.

The ⅝-inch Copperweld rod in 5 or 6-foot lengths is often used and has proved most satisfactory for telephone grounds. This rod is cold drawn for added stiffness and it also has excellent driving characteristics equivalent to many ½-inch rods.

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And it seeks to make folks throughout the country aware of the value of having public phones near at hand, wherever they may be. For that is a vital element of the over-all value of the services offered by the telephone industry.

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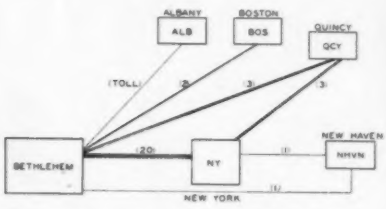
Bethlehem Has Direct Dialing System; Saves Up to 50 Per Cent

A LEASED, direct dial telephone network involving 176 inter-city circuits totaling 22,000 miles and serving 14,000 telephones connects all of Bethlehem Steel Co.'s principal offices in the East. Believed to be the only industrial telephone system of its kind in the country, it is credited by Bethlehem officials with savings of up to 50 per cent on unit costs over the former manually operated leased-line network. In addition to cutting costs, it is revolutionizing telephone usage throughout the company.

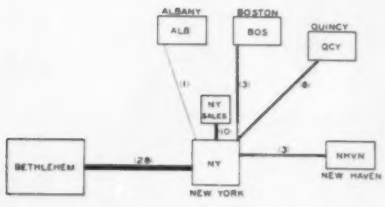
To use the network, the caller simply picks up his telephone and dials a circuit code or codes, followed by the extension number of the party called. No operator is involved. In some locations, the caller can dial a code which will connect him directly with any telephone in a distant city.

Presently limited to the Eastern section of the country, the network will eventually tie in offices west of Chicago —in the Northwest, the Southwest, and on the Pacific Coast.

Initiated four years ago with one experimental circuit group between the company's general office in Bethlehem and the district sales office in Philadelphia, the network has increased in scope and call-load by leaps and bounds—from 3,600 manually completed calls at Bethlehem in a working day in 1955 to 14,000 automatically switched calls in 1960.



EXAMPLE - MANUALLY OPERATED LEASED NETWORK
9-1-56



NOTE FIGURES INDICATE NUMBER OF CIRCUITS
EXAMPLE - DIRECT DIAL LEASED NETWORK
1-1-60

Fig. 1. Segment of Bethlehem's former leased line network (above) as compared with the present all-dial equipment leased line network (below) in use today. Bethlehem has found that savings in costs up to 50 per cent are achieved by the lower system.

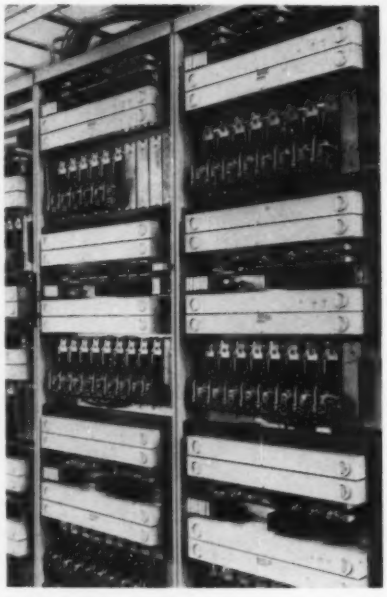


Fig. 2. The type of dial equipment used in the Bethlehem Steel network has certain limiting factors associated with it. These are rotary out trunk switches. They are used on larger groups of inter-city circuits. They assure the calling party access to all the circuits in the group.

This tremendous increase is ascribed to the availability of the service, ease of completion of calls, and the encouragement by management of transaction of business by telephone.

Speed and convenience are the principal advantages of the direct dial system. Calls now average 3.3 minutes from initiation to completion. With manual handling, they averaged slightly over six minutes duration. Delays now average about 10 in every 100 calls placed and can be reduced by getting operator assistance to complete the call on the network by making the next "down" line available, or by putting the caller on toll if the situation demands rush priority.

Prior to direct dialing there was an average 20-minute delay on calls placed through the operator. Sometimes, however, certain leased lines were so busy it was impossible to get onto them for much longer periods. This led to some abuses, the demand for preferential treatment, and oftentimes to the delay of important calls.

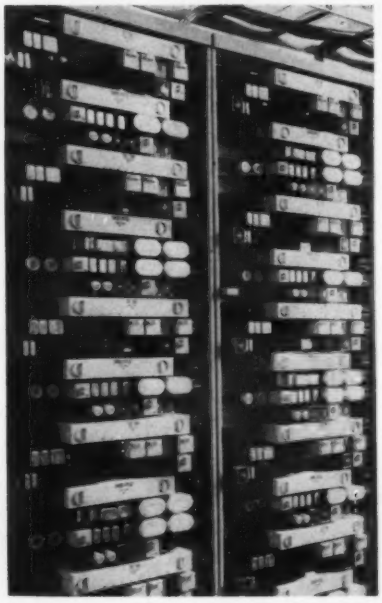


Fig. 3. These tie line terminating units are used on the incoming part of each of Bethlehem's inter-city circuits. They automatically add or remove from the circuit certain electrical components to assure satisfactory transmission of each call. Thus, a call from Bethlehem's New York office is assured proper transmission whether calling a telephone in the Bethlehem, Pa., office or in, for instance, Cleveland.

Until the direct dialing system went into operation, the home office switchboard had 19 positions and 33 operators for 24-hour operation. Now there are eight positions and 18 operators. With this reduced staff, the central dialing equipment at Bethlehem is handling 14,000 network calls daily (and will handle more as the network is extended) and 20,000 intra-office calls from 4,000 telephones. There has also been a corresponding reduction in load at other dial PBX locations.

With manual operation, individual circuits handled about 35 to 50 calls a day; with direct dialing, circuits are easily handling 100 calls daily. No longer having to obtain a circuit from the operator, callers are making more calls, and making them shorter.

One of the many contributing factors to lower unit costs with the direct dial network is found in the elimination of direct leased lines between Bethlehem

(Continued on page 48)

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for underground burial cable, with long service life and excellent resistance to moisture

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OPALON 1101

for semi-rigid primary insulation of switchboard wire, with high crush resistance, excellent flexibility

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new SPACE-MAKER* phone

mounts on any vertical surface
gives your subscribers more convenience

Never has there been an extension like AE's new Space-Maker phone. Here's why...

Space-Maker mounts on any vertical surface! That means a wall, column, side of workbench—you name it. Imagine the many convenient locations for a Space-Maker extension in the bedroom, utility rooms, basement, etc. It saves time and steps. And uses no table or counter space. That's not all...

Space-Maker has an adjustable dial and handset! The dial actually rotates 360°...tilts up to 45°. At any point it locks in place. The handset locks in seven different positions. No matter where the Space-Maker is mounted, your installer sets both dial and handset in the *most convenient* position. And that's not all...

Space-Maker zooms your extension sales! The reason is simple. You offer subscribers more convenient locations for an extension—locations that only Space-Maker fits. Sound profitable? It is! Order your new Space-Maker extension phones now...and choose from 10 colors.

Free Promotion Kit! Includes commercials, posters, newspaper ad mat, stuffer, etc. For your free kit, write: Automatic Electric Sales Corporation, Northlake, Illinois.

*Space-Maker is a trademark of Automatic Electric Company

Courts and Commissions

Set New Rates, Other Items For Nebraska Company

Rate increases, effective May 1, for the Bassett-Springview Telephone Co., Bassett, were approved on Apr. 13 by the Nebraska Railway Commission (TELEPHONY, Mar. 19).

The following rates are gross for handsets (and exclude a former rate for wall and desk-type telephones):

	Old	*New*
One-party business	$6.75	$8.00
Two-party business	5.00	7.25
One-party residence	3.75	5.00
Two-party residence	3.25	4.25
Four or five party residence	3.00	4.00
Service station	1.10	2.00

Rates were also established for other items including PBX boards at $25; business extensions at $1.50; residence extensions at $1.00; color telephones at 25 cents; and extra directory listings at 25 cents. Also approved was a charge of 10 cents per local call from pay-stations.

The rate base of $64,611.77 was based on the book cost of plant and equipment, plus material and supplies and cash working capital, less depreciation reserve.

The new rates are expected to produce $6,390 additional gross revenue and expenses are expected to increase by $5,527.60.

On this basis, net annual income available for interest, and dividends would be $3,756.82, which would produce a rate of return of 5.81 per cent on the net book rate base.

The company serves 367 subscribers and 167 service stations.

Ill. Bell, General of Ind. Ask Toll-Free Service

The Illinois Bell Telephone Co. on Apr. 20 asked the Indiana Public Service Commission for authority to link Gary, Ind., with most other Calumet, Ind. region cities for toll-free telephone service.

At present, a 15-cent toll is charged on calls between Gary and most of the other cities in the area except Merrillville, Ind. Other cities served by the Illinois Bell company in the region are connected with one another for toll-free calling, but not with Gary.

The General Telephone Co. of Indiana, Fort Wayne, joined the Bell company in the petition, and asked for establishment of toll-free service between its Hobart-East Gary and Ogden Dunes exchanges and the Gary exchange.

Rates would increase according to the increase in number of telephones that could be called without toll charges.

Present and proposed rates for Bell subscribers are:

	Present	*Proposed*
One-party residence	$ 5.75	$ 7.10
Two-party residence	4.90	6.05
One-party business	13.90	17.00

Kansas Mutual Asks OK To Sell Seven Exchanges

A June 6 hearing date has been set by the Kansas Corporation Commission on the petition of the Cherokee County Mutual Telephone Association, Columbus, to sell to the Craw-Kan Cooperative Association, Inc., Girard.

The Cherokee County company operates exchanges at Crestline, Faulkner, Hallowell, Melrose, Neutral, Sherman City and Sherwin Junction.

Announcement of the proposed sale was made by Pearl K. Jeffrey, Cherokee association secretary.

Mo. Service Dispute Case Won't Be Reopened

The Missouri Public Service Commission, in a 3-2 split decision, on Apr. 14 refused to re-open a case involving the Western Dial Telephone Co., Eldorado Springs, and the K. L. M. Telephone Co., Rich Hill.

In February, the commission ordered Western Dial to serve the Papinsville area; but K. L. M., then serving the community, asked the commission to reopen the case.

A controversy arose in August, 1959, when 25 petitioners asked that the K. L. M. company either improve the service, or that the petitioners be transferred into Western Dial's service area.

In the Apr. 14 decision, the commissioners felt that the petitioners were getting "little or no telephone service" since the K. L. M. company took over the area in 1955, and three members agreed that the case should not be reopened.

Two members disagreed, saying, ". . . in our opinion the commission is not authorized to require a company to unwillingly turn over a portion of its certified area." They also felt that the commission should have given K. L. M. an opportunity to improve its service before transferring the area to another company.

Approve Merger of Two With United of Indiana

The Indiana Public Service Commission on Apr. 21 approved the formal merger of the Jasper Telephone Corp., Seymour, and of the Urbana Telephone Co., Inc., into the United Telephone Co. of Indiana, Warsaw (TELEPHONY, Mar. 12).

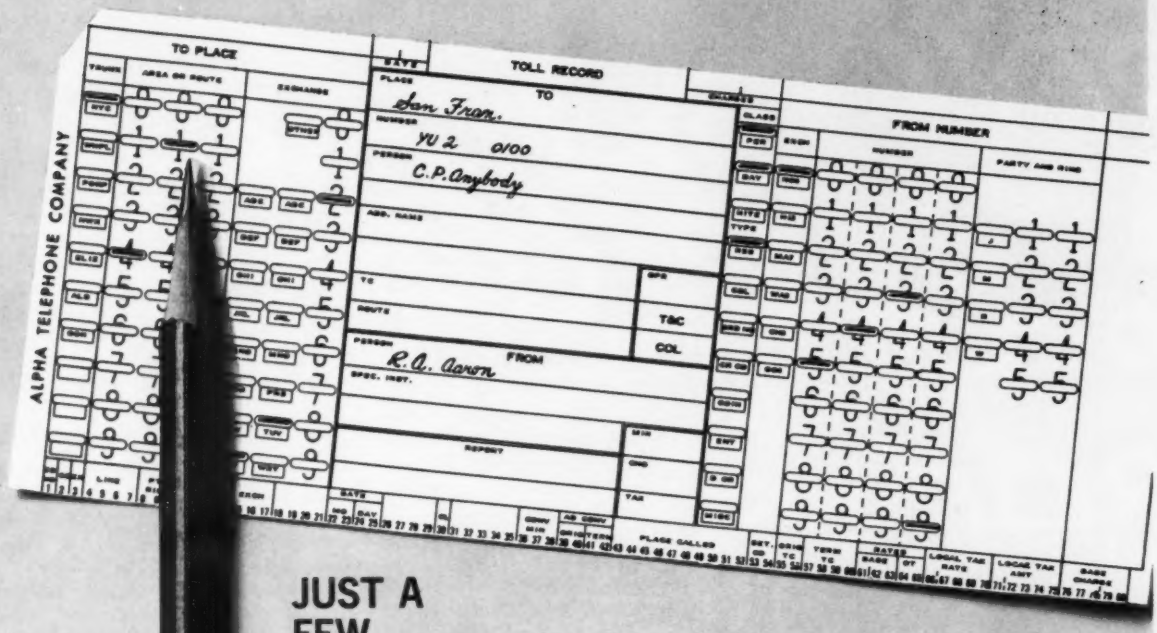
According to report, the Jasper company's exchanges at Remington, Rensselaer and Wheatfield, and the Urbana exchange will be cut over to dial operation.

In the same order, the commission also authorized the United company to issue 22,700 shares of $50 par value common stock to finance the merger and to handle improvement costs.

Court Upholds Order Of Missouri Commission

An order by the Missouri Public Service Commission preventing the community of Red Bird from becoming part of the Owensville telephone exchange (Fidelity Telephone Co., Sullivan) was upheld on Apr. 11 by Circuit Judge Sam C. Blair.

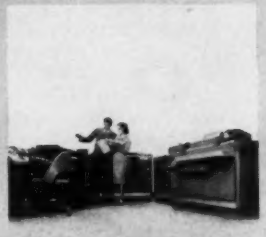
Red Bird residents had filed a petition for a writ of *certiorari* of review in the circuit court after the commission overruled a motion for rehearing on the case. Red Bird citizens said the Owensville exchange was willing



JUST A FEW PENCIL MARKS AND EACH TOLL CALL IS READY FOR AUTOMATIC BILLING

from call to bill—automatic toll charge processing is now within the reach of every independent telephone company

Just a few marks on an IBM Mark Sensed Toll Ticket, and your operator records all data pertinent to a toll call in a form ready for machine processing. **No further manual transcribing is needed!**



Through processing by IBM equipment, the pencil marks are converted to punched holes. Calls are automatically rated, amounts extended, and bills prepared.

In addition, statistics for traffic study and control, settlement reports, and toll studies are available as a by-product.

Find out how your company can benefit from the IBM concept of Balanced Data Processing—up-to-date machines backed by extensive supporting services—on a purchase or lease basis. Call your local IBM representative today.

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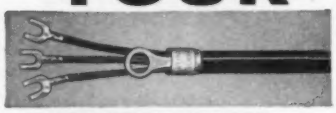
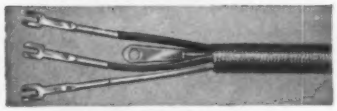


BEST

NYLON



BUY!

COTTON

Are you familiar with the features of these fine cords?

NEOPRENE covered cords are a highly serviceable cord, extensively used in a wide variety of services. They are moisture and grease proof . . . easy to keep clean.

NYLON covered cords are a relatively new development in telephone cords. Their fine smooth texture makes them the preferred cords for switchboard use. They give long service. Preferred by operators because of their fast, easy handling.

COTTON cords are in standard use everywhere. Their fine woven wrap makes them very serviceable for all around purposes.

Take your choice—Neoprene, Nylon or Cotton. They're all high quality cords made in accordance with Runzel high standard of quality. We carry a large stock of cords for every purpose.

Our geographical location means QUICK SERVICE.

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Cord and Wire Co.
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and able to provide them with modern service.

The commission ruled that the area including Red Bird is covered by a certificate of convenience and necessity held by the Meramec Telephone Co., St. James, through its Bland exchange, formerly, the Bland Telephone Co., which asked to sell to the Meramec company last year (TELEPHONY, May 9, 1959).

The Red Bird petitioners denied they were covered by the certificate, but the commission replied that they had not made an effort to trace the certificate. The circuit court then upheld the commission's decision.

Approve Purchase of Two And Loan in Kansas

The Kansas Corporation Commission on Apr. 20 authorized the Reno Telephone Association, Hutchinson, to take over the Gridley Telephone Co. and the Lehigh Telephone Utility.

In granting its approval, the commission also approved an $805,000 REA loan for the company to convert these two exchanges, and those already owned, at Walton, Americus and Durham, to dial service.

SW Bell Granted One Increase in Texas

The Southwestern Bell Telephone Co., it was reported on Apr. 17, has obtained approval of a rate increase at its Jacksboro, Tex. exchange, to be effective on June 27, as follows:

	Old	*New*
Business service	$9.50	$10.50
One-party residence	4.50	5.50
Two-party residence ...	4.00	4.50
Four-party residence ...	3.25	3.50

Approve Construction Loan For Arkansas Company

The Arkansas Public Service Commission on Apr. 20 approved a $35,000 loan for the Yell County Telephone Co., Danville (TELEPHONY, Mar. 26).

The funds are to be used in a construction program, including cutover of the Ola exchange to dial operation.

Hear 2 Wis. Rate Requests

On May 2 and 4 respectively, the Wisconsin Public Service Commission was to have heard the applications of the Sharon Telephone Co. and of the Boulder Junction Telephone Co. for authority to increase their rates.

Incorporate in Indiana

The Cadiz (Ind.) Rural Telephone Cooperative, Inc. has filed articles of incorporation, it was reported on Apr. 11.

Authorize Rate Increases For Two Ohio Companies

The Ohio Public Utilities Commission has granted rate increases to the Lemoyne Telephone Co. (TELEPHONY, Mar. 5); and to the Webster Telephone Co., Luckey, it was reported on Apr. 23.

The Lemoyne company's raise amounts to $27,000, or an increase of 41 per cent.

The company serves Woodville, Lemoyne, and Moline, and a total of 2,142 subscribers.

The Webster company, whose headquarters are at Luckey, sought an increase of $14,480, and was granted $9,250, or about a 38 per cent increase.

This company serves 768 subscribers.

Peske and Coxe Appointed To New Bell System Posts

The appointment of Edgar Peske as assistant vice president of the American Telephone & Telegraph Co. in New York, effective May 1, was announced on April 21. Mr. Peske has been assistant vice president of Illinois Bell in the department of revenue requirements and finance since 1954.

Harlow A. Coxe, assistant director of engineering economics for the AT&T Co., will be Mr. Peske's successor as Illinois Bell's assistant vice president.

Mr. Peske's new assignment will be business research problems in the AT&T Co.'s administration department. Holder of degrees in economics from the University of Wisconsin and Northwestern University, he first joined Illinois Bell in 1930. From 1943 to 1954, he held a number of positions in the Michigan Bell Telephone Co. and at AT&T before returning to Illinois Bell.

Mr. Peske is active in a number of professional financial and economic organizations, and currently is a member of the board of governors of the Investment Analysts Society of Chicago.

Mr. Coxe attended the University of Pennsylvania and Lafayette University before joining Western Electric Co. in 1923.

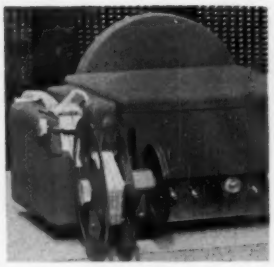
He was transferred to the Bell Telephone Co. of Pennsylvania as an engineer in 1924 and joined Illinois Bell in 1925.

He held a variety of engineering assignments before becoming general staff engineer in 1952. He joined the AT&T Co. in 1959.

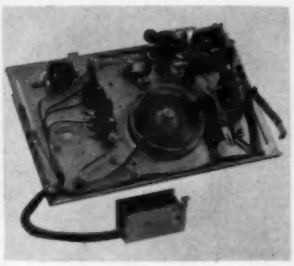
Subtlety of Advice

"Advice is like snow: the softer it falls, the longer it dwells upon, and the deeper it sinks into, the mind."—COLERIDGE.

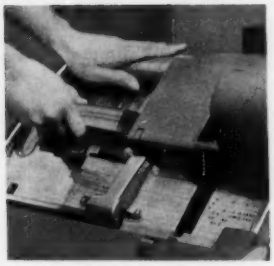
Printed Tickets



Paper Tape



Magnetic Tape



Punched Cards

Toll Ticketing Seminar discusses

how D.D.D. recording works

. . . and which is best for you

While P.P.C.S. was being avidly discussed in a nearby room (see TELEPHONY, April 2), other telephone men directed their attention to an equally vital toll ticketing topic: recording media.

The recording medium is the heart of any Direct Distance Dialing system. If it fails, revenue is lost. Naturally, telephone men are deeply interested in protecting that revenue. Their interest was indicated by the probing questions presented to the leader at the beginning of the program. Here is the first of those questions.

Q. How many types of toll ticketing recording equipment are available today?

A. Basically, there are two types: one uses magnetic tape, the other uses paper tape. The design of the paper tape devices may vary somewhat, depending on the manufacturer. However, they all operate on essentially the same principle.

Only one manufacturer, Stromberg-Carlson, has developed and marketed a toll ticketing system using magnetic tape recorders.

Q. What are the major differences between these two recording systems?

A. There are three major differences. The first difference between the systems is seen quite easily. Magnetic tape may be used indefinitely. Paper tape is a "one-time" operation.

Secondly, with magnetic tape recording is done directly at the time of the call. Most systems employing paper tape store the call information in a complex relay network, and record it on tape *after* the call has been completed. Any malfunction in this relay chain would permit *completed but unrecorded* calls to go undetected.

The third major difference is that information stored on magnetic tape recorders located in remote offices may be *directly and automatically* read out in the central accounting center at any convenient time. This is done by means of a data link and does not require a person to go to the remote office at any time in the process. Paper tape systems normally make it necessary to physically transport the tape from a remote office to the billing office in order to take advantage of the economies possible through centralized accounting. If a remote readout is desired, an attendant must be stationed in the remote office all during this operation, and additional transmission equipment is needed as an intermediary component to transmit the information over wire to the billing center. For this reason, physical transportation of the tape to the accounting center is the method normally used with paper tape.

Q. How is call information recorded on magnetic tape?

A. The toll ticketing magnetic tape recorder is, in many ways, like a tape recorder that you might have in your home. The big difference is that each magnetic impulse is registered while the tape is *stationary*, rather than while moving, as on home-type recorders. This stationary recording was the revolutionary step that made magnetic tape practical as a recording medium for toll ticketing. It allows a maximum number of calls to be registered on the tape (since it moves only when information is to be recorded), and it further insures a clear pulse impression. After each impulse is recorded, the tape is moved forward by a modified XY® stepping switch motor magnet.

All necessary billing information is recorded directly onto the tape. This comprises the date, the time the call was placed, the calling number, the area code if any, the called number, duration of the call and, on systems which include P.P.C.S., a "class of call" code.

This information is recorded on the upper half of the magnetic tape. The lower half of the tape records spaces between the information segments so that they can be read out correctly. When a call is ended, this is indicated by a special pulse on both the upper and lower halves of the tape. The tape is then automatically advanced several spaces to provide a blank section between calls.

Q. What about delays for lack of recording equipment?

A. In the magnetic tape system, the whole process is complete in one component—direct recording on the tape itself. This single-component approach is better able to handle peak traffic on a no-delay basis.

Normally, in the paper tape system, cost dictates that tape-punching equipment be kept to the minimum. This means that relay storage equipment may be held idle while waiting to release its information to an overloaded tape punch. While the relay equipment is thus forced to stand idle, all attempts to place new toll calls will be denied access to this recording circuit.

Q. Wouldn't magnetic tape recording also cause delays?

A. I assume you refer to a trunk-busy situation where the tapes have become filled. The Stromberg-Carlson magnetic tape system has built-in safeguards against this condition.

First, under normal traffic conditions, readout is scheduled to take place *before* the recorders are filled to capacity. This may be done manually from the central readout office or at some preset low-traffic period by an automatic timing device.

Second, to take care of abnormally heavy traffic, the system is arranged so that any completely full recorder will activate the readout equipment and be played back individually whenever this occurs, and then be available for further recording until such time as systematic group readout takes place.

Q. How is magnetic tape readout accomplished?

A. During the playback cycle, magnetic impressions recorded on the tape are passed in front of the record-playback head. An impulse of voltage is created for each magnetic impression on the tape. These electrical pulses are fed to electronic counting chains.

The electronic counting devices check to see that all information is present for each call before the tape is advanced to the next call. If all information is present, the printing or card-punching equipment is connected to the counting chains. The information is then transferred to a permanent printed or punched record. Billing information can be printed in any order that is desired.

As the information for each call is fed from the tape to the counting devices, checked and converted into the permanent record, the tape is erased. When all the information has been transferred, the tape returns to the home position and is ready to record more calls.

Readout from remote recording offices is a process quite similar to local readout. It, too, is completely automatic. A data link connects the remote recording office with the accounting center. This link carries playback pulses from the tape to the centrally located counting chains. The remaining steps are identical to local readout.

Q. Are there checks to see that calls are read out correctly?

A. At the beginning of each day a test recording (typical of actual calls) is fed into the readout equipment and the resultant copy is checked *before* any new toll call information is played back. This proves that the equipment is trouble-free and ready to go. Should a fault be indicated during this test recording, it sounds an alarm; the ticket itself will be the means for isolating and correcting the faulty condition.

Toll information can then be read out with confidence that the equipment is functioning properly. As a further safeguard, if at some later time a fault (such as voltage drop) should occur, an alarm will sound, and playback ceases until the fault is located and corrected.

Q. What is the comparative reliability of paper vs. magnetic tape systems?

A. It would simply be untrue to say that any system is beyond the possibility of failure. However, of the two systems, magnetic tape recording seems to be more reliable. First, this system is simpler. It has fewer chances to go wrong. It uses one stepping switch and one recording head to transmit pulses directly to the tape.

Most paper tape systems employ an involved relay network which does not record directly, but only stores the information until after the call is completed. If one element of the several dozen relays involved should fail, the call information will never be punched onto paper tape.

Magnetic tape is also more reliable because of the stress-free electrical transfer of information to the tape. All call information is recorded safely and surely with a minimum of pressure. There is no snagging or tearing of magnetic tape. In fact, the process is so free from stress that magnetic tape can be used over and over again.

The reliability of magnetic tape has been demonstrated in other areas too. High-speed computers work with astounding accuracy from data fed them on magnetic tapes. And every week hundreds of thousands of dollars are spent on taped television shows. Reliability is of utmost importance in each of these fields. Magnetic tape has that reliability.

Q. How do the features of magnetic tape cut operating expense?

A. Use of the data link feature can greatly lower operating expense. Automatic remote readout offers obvious savings over the physical transportation of paper tape to the accounting center. Considering both labor and equipment costs, a magnetic tape system seems more apt to be proved in.

Billing costs are cut by another magnetic tape feature. Data from the magnetic tape is fed into counting devices and directly to the printer or card punch. With some paper tape systems, a costly tape-to-card converter is necessary to feed information to a card punch. Because of the extra machinery involved, the original investment will be higher for billing equipment to process paper tape. Card punches which operate directly from paper tape are available, but cost about twice as much to rent as those which punch cards from magnetic tape pulses.

Perhaps the most important saving comes from the simple design of the magnetic tape recording equipment. Because pulses are recorded directly on the tape, there are fewer steps involved, less equipment is needed, and maintenance problems are minimized.

Bell of Penn. Editor Wins Traffic Safety Award

W. J. Hlivko, editor of *The Telephone News*, employe publication of the Bell Telephone Co. of Pennsylvania, on Apr. 21 was presented with the 1959 traffic safety award of excellence of the American Association of Industrial Editors. The award was presented by William J. Bethea, executive secretary of President Eisenhower's committee for traffic safety, at the association's 22nd annual convention in Charleston, S. C.

The American Association of Industrial Editors comprises several hundred editors representing the leading companies in the country. Their publications reach an audience of more than 100 million people.

U.S. C. of C. Issues Book On Workmen's Compensation

To help employers learn how to conform to the workmen's compensation laws, the Chamber of Commerce of the United States has issued its 1960 biennial revision of the "Analysis of Workmen's Compensation Laws." The 57-page booklet includes the latest changes in U. S. state and federal, and in the Canadian provincial laws.

From the booklet, employers can learn what they must report when employes are injured. They can also learn their options in getting workmen's compensation insurance, and the maximum and minimum benefits paid for on-the-job injuries or disease to employes.

The booklet shows that in most states employers can hire handicapped workers, yet not be liable for the full incapacity if a hurt is aggravated. State funds pay for the incapacities not due to the additional injuries.

For a copy of the booklet, send $1.00 to the Insurance Department, Chamber of Commerce of the United States, 1615 H St. N.W., Washington 6, D. C. Discounts are in effect for quantity orders.

Obituary

MRS. FRANK L. MEDDAUGH, 74, president of the Candor (N.Y.) Telephone Co., died in Waverly, N.Y. on Apr. 25 following a lengthy illness.

Prior to her marriage, as Miss Ethel Jackson, she had joined the Candor company as its first switchboard operator, shortly after the company's organization in 1905. She married Frank L. Meddaugh, the son of one of the organizers and first manager of the Candor company, Preston Meddaugh.

Active in company management until her illness, Mrs. Meddaugh was elected president in 1946.

She is survived by her husband, Frank L. Meddaugh of Candor; by two daughters, Mrs. Richard Deming, Rochester, Minn.; and Mrs. Henry C. Hollenbeck of Candor; a son, Elmer L. Meddaugh of Candor; and several grandchildren. A son, Preston Meddaugh, preceded his mother in death.

Two Telephone Men to Tour NATO, European Commands

Two telephone industry executives were among 50 members of the Defense Orientation Conference Association who left New York on Apr. 30 on a two-week, 10,000-mile tour of Europe to visit NATO and U. S. European Command Headquarters and observe operational demonstrations at military commands in Europe.

The telephone industry representatives are R. A. Lumpkin of Mattoon, Ill., president of the Illinois Consolidated Telephone Co., and W. J. McManus, vice president-public relations of Chesapeake & Potomac Telephone Co., Washington, D. C.

This group of leading citizens, representing an occupational and geographical cross-section of America, are making the trip entirely at their own expense for the purpose of viewing first-hand the military organizations and defense concepts of our forces in Europe, and to gain a broad personal understanding of this vital phase of our defense system.

The first two days of the tour will be spent in Paris where the group will be briefed on the over-all organization and missions of the North Atlantic Treaty Organization, the Supreme Allied Command Europe, and the United States European Command.

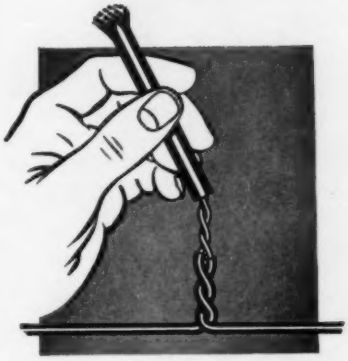
Following the Paris presentations, the group will visit European headquarters and field installations of U. S. Army, Navy, Air Force and Marine Corps commands for further briefings and observation of operational exercises.

The itinerary includes, in addition to the Paris stop, briefings at Headquarters U. S. Naval Forces, Europe, and Third Air Force in England; Headquarters U. S. Air Forces, Europe, in Wiesbaden; the Berlin Command; Headquarters U. S. Army, Europe, in Heidelberg; the NATO Southern Command and the U. S. Sixth Fleet in Naples; and the Joint U. S. Military Group in Madrid. The group will return to New York on May 15.

Tax Reduction Aim

"If tax reduction becomes necessary, emphasis must be given to tax reforms which will stimulate savings and new investment." — JAMES F. OATES JR., *president, Equitable Life Assurance Society of the United States.*

Superior's "Super-Splice"® is safe and sure!



"Super-Splice" makes splices waterproof . . . from inside out!

Sealed at one end, this plastic splice sleeve is filled with an insulating and waterproofing compound.*

Economical "Super-Splice," a Superior exclusive, makes the splice permanently as good as the cable . . . yet it can be re-entered easily. The compound never hardens or oozes out no matter what the temperature.

Prevent leakage currents and breakdowns in the presence of moisture...good for 25,000 v.d.c. Order "Super-Splice" NOW!

*A Dow-Corning silicone compound.

An REA Standard.

"Super-Splice" is available for use with straight, butt or bridge splices.

For further information on economical "SUPER-SPLICE", write

SUPERIOR CABLE

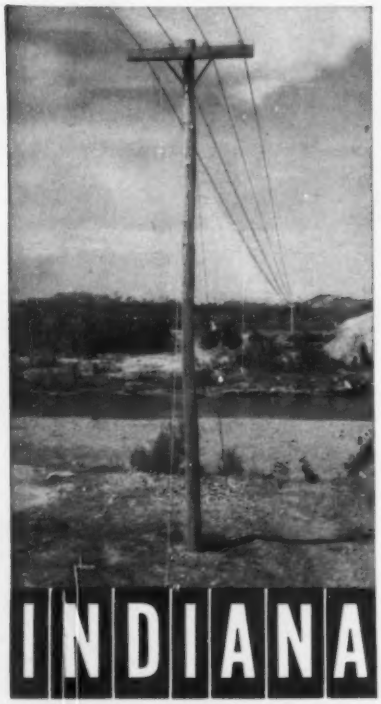
SUPERIOR CABLE CORPORATION
Hickory, North Carolina

Crapo
HTL-195
EXTRA HIGH-TENSILE TELEPHONE LINE WIRE
for low-cost Rural Lines

• Spans up to 600 feet in Heavy Loading, 650 feet in Medium Loading and 700 feet in Light Loading districts are possible where Crapo HTL-195 is employed. This extra long span construction results in marked savings in costs per mile of line. Pole structures can be reduced to a minimum. Fewer pole structures mean substantial savings both in materials and man-hours of labor. There is less hauling to be done, fewer holes to dig, less material to be handled, installed and connected.

Improved electrical qualities make practical typical subscriber loops of 14 to 15 miles with normal voltages and equipment. Also can be used for subscriber carrier.

Write for Engineering Manual No.TM-59



INDIANA
STEEL & WIRE CO., INC.
MUNCIE, INDIANA

BETHLEHEM DIRECT DIALING SYSTEM

Concluded from page 38

and some of the company's outlying offices. By adding circuits to trunk routes and using offices, such as Sparrows Point, N. Y., Cleveland, etc., as switching stations, the unit cost of service is reduced as the number of circuits added to the trunk groups is increased.

The accompanying diagram, *Fig. 1*, shows the system formerly used with manually operated circuits in the Bethlehem-New York-New England area as compared with the present arrangement. *Figs. 2, 3,* and *4*, illustrate some of the automatic equipment which makes the direct dial system possible.

The day is coming, Bethlehem officials predict, when equipment now in the experimental stages will be available for transmitting facsimile, digital, teletype, handwritten, and oral data over the telephone network. When this happens, the company's communications will be handled by one system, and existing parallel telegraph-teletype lines will become obsolete.

Fig. 4. View showing a small portion of the dial equipment in Bethlehem Steel Co. offices.

Two Bell Companies Cited For Safety Advertising

Two telephone companies have received the National Safety Council's 1959 public interest award for the exceptional service to safety of their advertising campaigns.

The Bell Telephone Co. of Pennsylvania promoted a school safety campaign by displaying posters on company trucks, distributing leaflets and booklets, and sponsoring a school safety patrol poster contest.

The Pacific Telephone & Telegraph Co. (Oregon area) sponsored a community safety project publicized on a morning television show.

Judges for the award were Norman Damon, vice president, Automotive Safety Foundation, chairman; Frederick H. Garrigus, manager, organizational services, National Association of Broadcasters, and Wesley I. Nunn, advertising manager, Standard Oil Co., (Indiana).

NEW TEST METER MEASURES SOUND AND POWER LEVELS

The 45-111B DBM Meter is a portable, battery operated instrument used to measure a-c voltages in the audio spectrum. An internal logarithmic amplifier allows the instrument's large meter to be linearly scaled and read in decibels directly. The meter covers a range of 40 db in ten generously overlapping ranges for maximum accuracy. Signals can be monitored audibly by means of an internal amplifier and a headphone jack on the front panel. Typical applications in the telephony field are: line-loss measurements, noise measurements, and frequency response measurements of lines and equipment.

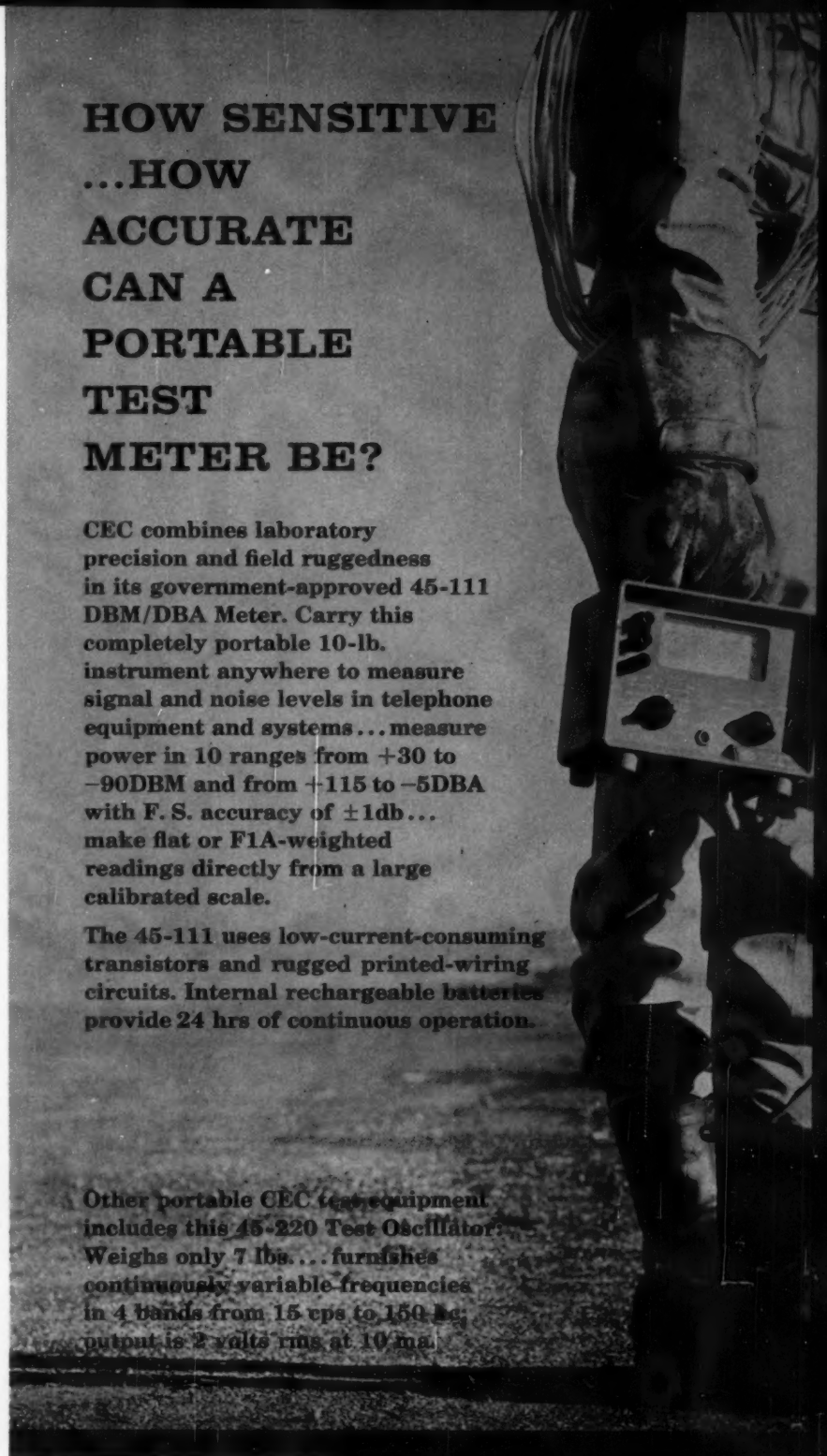
Two switch-operated "modes" of operation are provided: 1) flat response at all frequencies in the audio spectrum, with readings calibrated in DBM; 2) response only to a restricted band of frequencies corresponding to the F1A-weighting curve, with readings calibrated in DBA.

Continued scale accuracy is assured by a self-contained 1000-cycle calibration oscillator which permits fast, easy calibration of the logarithmic amplifier. The oscillator produces an accurate —50 dbm signal at the meter's input terminals when the front-panel control is in the CALIBRATE position.

Unique design of the DBM/DBA Meter combines complete field portability with laboratory accuracy of ±1 db and an unusual sensitivity which permits measurements of less than zero db. Compactness and lightweight are achieved through the use of low-current-consuming transistors, printed wiring, miniaturized packaging, and a compact, long-life power supply. Instant warm-up characteristics of the all-transistor circuitry assure stable operation and complete absence from drift as soon as the meter is turned on.

Operating power source is a hermetically sealed, rechargeable, nickel-cadmium battery which provides 24 hours of continuous operation. An internal recifier allows recharging by simply connecting the instrument to a 115-volt, a-c line supply with the cord provided. The battery is designed to last the life of the instrument.

For further information, write EMI Division, Consolidated Electrodynamics, 300 Sierra Madre Villa, Pasadena, Calif.



HOW SENSITIVE ...HOW ACCURATE CAN A PORTABLE TEST METER BE?

CEC combines laboratory precision and field ruggedness in its government-approved 45-111 DBM/DBA Meter. Carry this completely portable 10-lb. instrument anywhere to measure signal and noise levels in telephone equipment and systems... measure power in 10 ranges from +30 to −90DBM and from +115 to −5DBA with F. S. accuracy of ±1db... make flat or F1A-weighted readings directly from a large calibrated scale.

The 45-111 uses low-current-consuming transistors and rugged printed-wiring circuits. Internal rechargeable batteries provide 24 hrs of continuous operation.

Other portable CEC test equipment includes this 45-220 Test Oscillator: Weighs only 7 lbs.... furnishes continuously variable frequencies in 4 bands from 15 cps to 150 kc; output is 2 volts rms at 10 ma.

For complete information, write for Bulletin CEC 7002-X3.

Electro Mechanical Instrument Division

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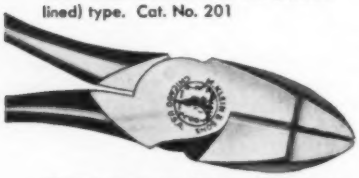
KLEINS

for LINEMEN and ELECTRICIANS

The Original Klein Side Cutting Plier—Also available in NE (Streamlined) type. Cat. No. 201



High Leverage Plier—Extra high leverage permits cutting extremely tough wire. Also available in the standard type as shown above. Cat. No. 213-9NE

High Leverage Oblique Cutting Plier—A recently introduced plier designed to cut toughest wire. Cat. No. 228-8

Electrician Conduit Plier—Reams inside and outside of conduit, tightens lock nuts in outlet boxes. Cat. No. 333-8

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Echols Elected President, Indiana Bell; Hanna Retires

Roy C. Echols, who has been vice president-operations for American Telephone & Telegraph Co., has been elected president of the Indiana Bell Telephone Co., succeeding Harry S. Hanna who retired on Apr. 30. Mr. Echols also was named a director.

Mr. Echols has been with AT&T since early in 1958. For almost four years prior to that time, Mr. Echols served as Indiana Bell's vice president and general manager.

He has devoted much of his lifetime to the telephone business, beginning 40 years ago as a part-time clerk for Southwestern Bell Telephone Co. in Dallas, Tex. He worked in the company's accounting department while attending Southern Methodist University and later served in plant department posts in Texas, Arkansas, Missouri and Oklahoma.

Mr. Echols became a Southwestern Bell assistant vice president in St. Louis in 1949 and Oklahoma general manager in 1950. He went to Indiana Bell from Oklahoma City in mid-1954 to direct the operating departments.

Then in 1958, he was transferred to AT&T—as an assistant vice president originally and, for the past year, as vice president-operations.

Mr. Echols is a native Texan and was born in Hubbard City.

Mr. Hanna, who will continue to serve as a director of Indiana Bell, is the company's fifth president and has guided it through 12 years of unprecedented growth. He went to Indiana Bell in 1933 and was elected president in 1948.

During his years with the company, it has grown from one serving about 175,000 telephones to almost a million.

Mr. Hanna's telephone career dates back 38 years to 1922, when he joined the Ohio Bell Telephone Co. as an engineer. He joined the American Telephone & Telegraph Co. in New York in 1929, where he was in the commercial division of the operations department.

He went to Indiana Bell late in 1933 as vice president in charge of public relations and personnel, became vice president and general manager in 1946, and was elected president in March, 1948.

C. H. Scott Heads Tenn. Division, General of SE

Clark H. Scott, division plant superintendent of the West Virginia-Virginia division of General Telephone Co. of the Southeast, has been promoted to the position of vice president and division manager of the company's Tennessee division.

In his new assignment, Mr. Scott will be in charge of the firm's operations in Tennessee, with headquarters in Cookeville, Tenn.

Announcement of Mr. Scott's transfer, effective May 2, was made by General's operating vice president, G. A. Klein.

C. H. SCOTT

A native of Daisy Town, Pa., Mr. Scott graduated from Washington and Jefferson College in Washington, Pa., with a B.S. degree in physics.

He first entered the telephone industry in 1945 in Durham, N.C., when he joined the Durham Telephone Co., a predecessor to General of the Southeast.

Since that time, he has risen steadily through such positions as installation supervisor, assistant plant supervisor, and plant supervisor in Durham.

He was transferred to the West Virginia post in March 1959.

Mr. Scott replaces Wilbur K. Shell, who has been named equipment and toll line engineer for the company's six-state operating area, with headquarters in the general office in Durham.

Ky. Independent First in '59 Communications Safety

The Consolidated Telephone Co., Florence, Ky., has been awarded first place among communications companies in a contest sponsored by the National Safety Council for the year 1959. The Consolidated company did not have a lost-time accident last year.

The National Safety Council judges the rating of the company in terms of the number of lost-time accidents for every million man-hours worked.

The following are the telephone company award winners with their ratings based on lost-time accidents in relation to man-hours worked.

	Company and Location	Lost Time Accidents Rating
1.	Consolidated Telephone Co., Florence, Ky.	.00
2.	California Interstate Telephone Co., Victorville	1.90
3.	General Telephone Co. of Michigan, Muskegon	2.41
4.	General Telephone Co. of Florida, Tampa	3.26
5.	General Telephone Co. of Ohio, Marion	3.92
6.	Philippine Long Distance Telephone Co., Manila, P.I.	4.55
7.	General Telephone Co. of Upstate New York, Johnstown	4.68
8.	General Telephone Co. of California, Santa Monica	4.73
9.	General Telephone Co. of Pennsylvania, Erie	4.95
10.	General Telephone Co. of the Northwest, Spokane	5.31
11.	General Telephone Co. of Wisconsin, Madison	6.19
12.	General Telephone Co. of Kentucky, Lexington	7.53
13.	General Telephone Co. of the Southwest, San Angelo, Tex.	8.27
14.	California Water & Telephone Co., Monrovia	8.29
15.	General Telephone Co. of Indiana, Fort Wayne	9.31
16.	General Telephone Co. of the Southeast, Durham, N.C.	12.49
17.	De Kalb Telephone Cooperative, Alexandria, Tenn.	.00B
18.	General Telephone Co. of Illinois, Bloomington	6.22M

(B) Below a minimum of 60,000 man-hours per year.
(M) December report missing from figure given.

Figures released by the National Safety Council for 1959 show that the communications industry, as a whole, had an average rating of 5.63 lost-time accidents for every million man-hours worked.

Mitchell of GT&E Elected To Mass. Mutual Life Board

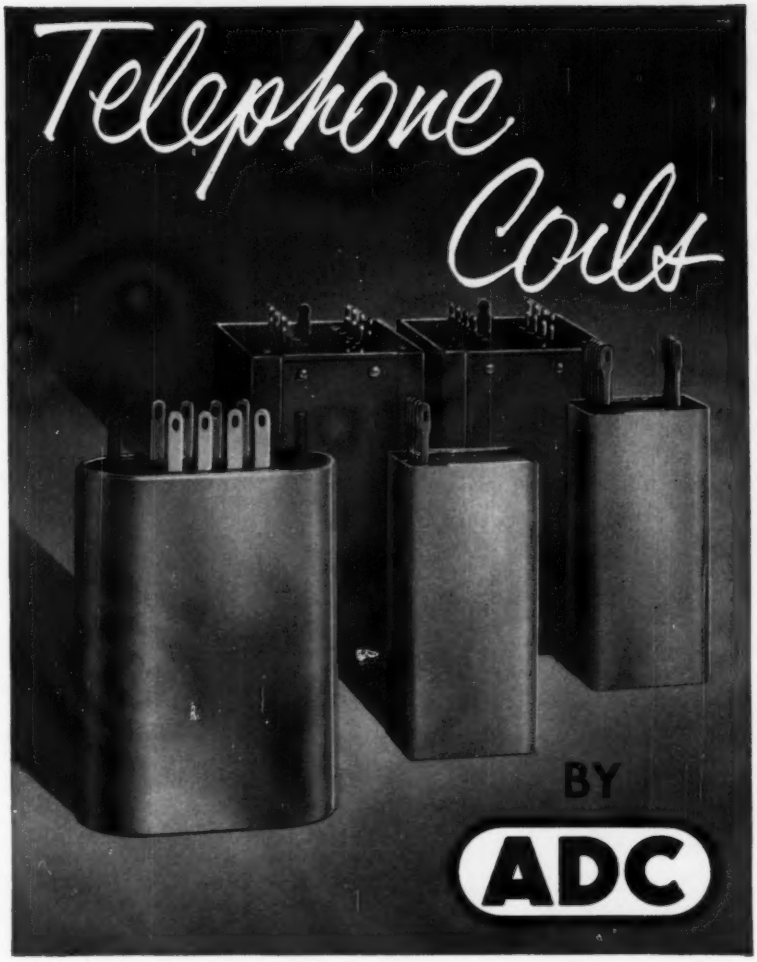
Don G. Mitchell, president of General Telephone & Electronics Corp., has been elected a director of the Massachusetts Mutual Life Insurance Co., according to announcement by Leland J. Kalmbach, president of the company.

Mr. Mitchell is also chairman of Sylvania Electric Products Inc., a principal manufacturing subsidiary of GT&E, as well as a director of various other companies.

In addition, he serves as chairman of the American Management Association, and is active in various major industry associations.

Telephone Takes Night Orders

Two supermarkets in Regina, Saskatchewan, Canada, are offering their customers 24-hour telephone order service. A telephone answering device automatically records the caller's grocery order at night, and the order is prepared for delivery the next day.



In addition to their regular stock and custom transformers for the electronic industry, ADC has long been a dependable source of transformers and filters to the telephone and telegraph industry. When Western Electric announced they would no longer supply these components to manufacturers, ADC put their 24 years of experience to use designing and tooling a series of "coils" which are electrically and physically interchangeable with similar components made by The Western Electric Company. Many of these are in stock. If you use such components, we suggest that you write for more information. We believe you'll be pleased with both the price and delivery.

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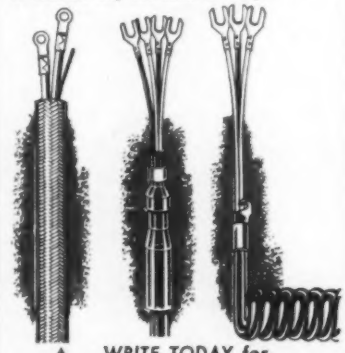

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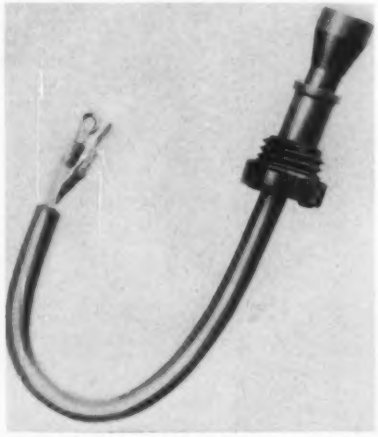
News on New Products

BATTERY IMMERSION THERMOSTAT—D. W. Onan & Sons Inc. has designed and manufactured a battery immersion thermostat for use with its own electric power plants, which, Onan says, will handle nearly any battery problem.



Applications of the new battery immersion thermostat include prevention of battery inefficiency caused by low temperatures, and prevention of battery damage caused by high temperatures. The company also says the unit is capable of furnishing dependable control of heating elements in stock tanks, where temperature must not drop below a certain point.

At the desired temperature, the thermostat, Onan says, can turn off or on battery heaters and battery chargers. This snap-action thermostat has a plus or minus 10-degree accuracy and is available in a range of models to contact at any temperature from –65 to +150 degrees F. Request NP1323.

•

PULSE METER-POWER SUPPLY UNIT—The Airtronics International Corp. is making available—as an extension of its line of telephone testing equipment—a pulse meter and adjustable power supply, Model PMVPS-1. The instrument is designed as a compact, portable, and versatile unit for the telephone equipment room, laboratory, or plant.

The dual purpose unit, according to Airtronics, can be used for checking the speed of square wave pulses, in the speed range of 0 to 15 pulses per

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Please have the manufacturer send me without obligation the literature indicated by the following numbers:

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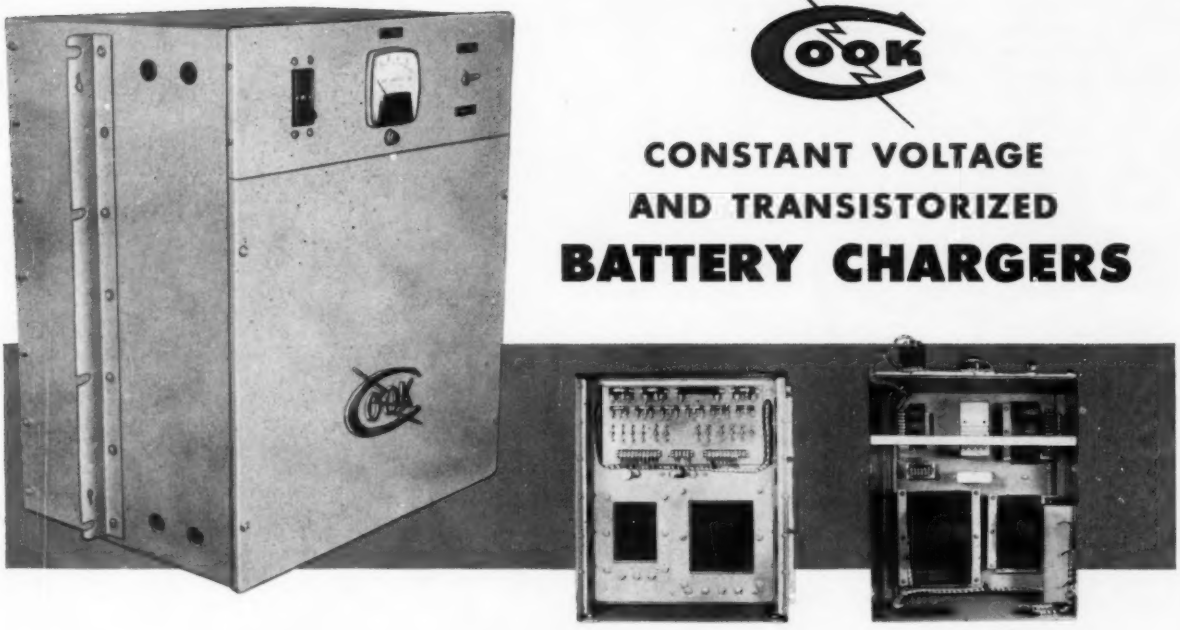

Cook constant voltage type battery chargers have no vacuum tubes, gas filled tubes, or motors to restrict the service life of the units. They can supply an adjustable, closely regulated floating voltage within the current charging range of the battery. Battery equalizing can be had through the use of a toggle switch mounted on the control panel. Floating and equalizing voltages are regulated by a magnetic amplifier, and a current limiter restricts the maximum available current to a safe preset value without releasing the breaker. These units do not have forced cooling and the result is more silent dependable performance.

Controls, connectors and fuses are conveniently located inside a rigidly constructed, attractively finished cabinet and are easily accessible. Hermetically sealed components, solid state silicon rectifiers and transistors, vitreous-enameled wire wound resistors and potentiometers, and proven circuit protectors insure extended life for greater profits.

A transistorized model of the Cook Battery Charger is also available. This model features transistorized voltage control with magnetic power amplifiers and sealed silicon rectifiers. No periodic adjustments are needed for solid state silicon rectifiers which are smaller in size and weight, and lack of any moving or vibrating parts insures extended life and minimum operating noise. High efficiency through the use of hermetically sealed silicon power rectifiers, and the incorporation of a closed loop control circuit, all insure more Profits through better Peformance.

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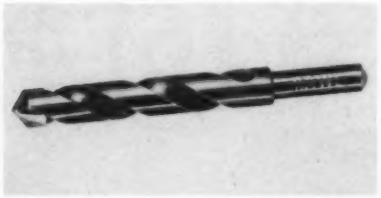
second, and for checking the width of the active component of the square wave. The meter can accept loop, battery (48-50 volts); polar duplex (alternate resistance battery and ground); or carrier (resistance battery) pulsing.

The meter can also be used as a light-duty power supply source which is continuously variable from 0 volts to 300 volts. The company states that a feature of the power supply is the smoothness of voltage control, particularly in the low-voltage ranges. Request NP1324.

•

DEEP FLUTE CARBIDE DRILLS—The Rawlplug Co. has introduced spiral carbide-tipped masonry drills with deep flutes and closely-controlled diameters



to supplement its line of spiral carbide drills. Both types are for use with high-speed electric drills.

The deep and wide flutes of these new drills, the company states, provide an easier path to clear flaky or gummy cuttings from materials such as tile or asphalt. Drill diameters accurately matching those of Rawlplug masonry anchors are reported to result in higher holding power.

The new drills also have brazed-in carbide tips for support against shock. The pivot point, at the geometric center of the carbide tip, directs the full force behind the drill against the center of the tip for quicker drilling and less of the usual tendency to "walk."

Drill diameters range from .132 inches to 1.535 inches; and over-all lengths from 2½ inches to 10 inches. Sizes are available from ⅛ inch to 1½ inches. Request NP1325.

•

HIGH DENSITY POLYETHYLENE COMPOUND — Union Carbide Plastics Co. has announced what it terms a "significantly improved" high density polyethylene compound for wire and cable applications. The company states the new resin, Bakelite DGD-4100, combines the advantages of greater toughness, high abrasion resistance, reduced compressibility and better heat deflection with greatly improved resistance to stress cracking and thermal embrittlement.

In standard IPCEA (Insulated Power Cable Engineers Association) tree wire abrasion tests, according to Union Carbide, the new material withstood over 1,500,000 cycles. When tested for thermal embrittlement resistance, DGD-4100 exhibited no failures after 5,000 hours of the Underwriters Laboratories Heat Shock Test. In tests for resistance to environmental stress cracking, time to an initial failure at 50 degrees C. was greater than 500 hours.

DGD-4100 has also been approved, the company says, as insulation for military telephone singles; as insulation for single-pair (C-Rural) telephone distribution cable under REA specifications; and as insulation for aerial spacer cable and tree wire by Commonwealth Edison of Chicago. DGD-4100 is also being used in service drop cable, line wire, coaxial cable and high-voltage power cable. Request NP1326.

•

PLASTIC INSULATED CANTEEN—The T. A. Ford Co. is offering a plastic insulated water canteen, said to keep water cold or hot for 6 hours or longer, which is described as suited to the needs of telephone, power and construction employes, as well as other workers.

The Ford canteen, according to the company, is unbreakable, built of rugged plastic, and insulated with clear Fiberglas. It has the added advantage, the company points out, of being a non-conductor of electricity.

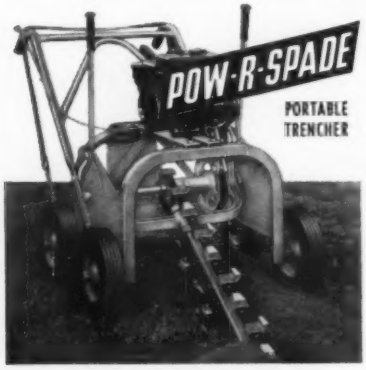
Carried in a water-repellant, denim-covered case (available in either bright red for visibility or light blue), the canteen is light-weight.

The company states the canteen cannot spill its contents when laid on its side, and that it comes equipped with a handy pocket for paper cups. Request NP1327.

•

HANDY PUMP—Reported to be a valuable piece of equipment for maintenance crews of utility companies is a new pump, called "Handy Pump" offered by the Gorman-Rupp Co.

Pictured is the Handy Pump being used to drain a flooded manhole. Its quiet operation, says the company, makes it practical anywhere, even in



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"quiet zones," such as in the vicinity of a hospital.

The Handy Pump weighs 13 pounds, is powered by a ½ HP motor, and operates on ac or dc current, according to Gorman-Rupp.

The operating range is 2 gallons per minute, 44 pounds pressure with 102 feet of head, up to 18 gallons per minute, 16 pounds pressure with 37 feet of head. Request NP1328.

■

ONE-MAN WIRE PULLER—The new Fairfield Industries Porta-Puller answers the need for a portable, hand-operated wire puller that lets one man do tough wire-pulling jobs with ease, it is reported, even in difficult and confined areas. The Porta-Puller is described as a time and labor-saver developed by electricians for electrical contractors and industry.

The wire puller is 40 inches over-all and weighs 26 pounds; yet, Fairfield says, it gives one man a mechanical advantage sufficient to pull the "meanest"

200-foot run through exposed or concealed conduit up to 2 inches in diameter.

One man may do the toughest wire-pulling jobs while standing on a ladder or lying flat in a narrow tunnel. The Porta-Puller is said to provide control of the pull with no danger of striking a hot bus or damaging surrounding walls or paneling.

According to the manufacturer, the device finds added usage as a portable winch to hoist motors, fixtures, panels, conduit, etc. Request NP1329.

●

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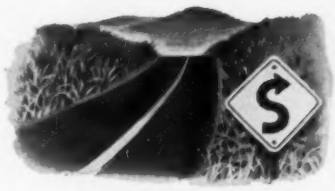

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With the right product—Amchem's tremendously diversified product line is your assurance that the right weed and brush killer is available and will be utilized for your specific problem. Weedone Brush Killers, for example, have been used in the field for years and proven eminently successful in eliminating weeds and brush wherever they are a problem. Why not bring your problems to Amchem?

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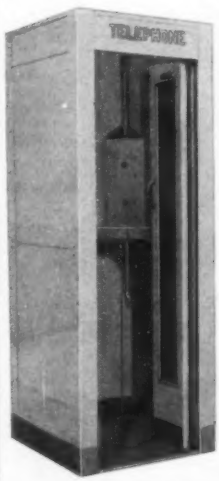

SUTTLE's A-10S full length steel telephone booth features heavy gauge steel construction, choice of many baked enamel interior and exterior finishes. Sturdy, long-lasting construction. An excellent buy with many extras other booths do not have. Write for free literature today on full booth line!

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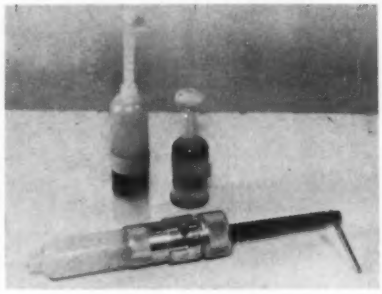
EQUIPMENT—The introduction of epoxy resins for cable damming has caused application and handling problems, according to Semco Sales & Service, Inc. To meet these problems, Semco has developed two new products: a two-component SemKit, and a 755 applicating gun, to insure proper mixing and application of the damming resin.

The advantages of the Semkit and applicating gun are listed by Semco as follows:

(1) Eliminates all contact with the resin during the mixing and application.
(2) No transfer of the resin from the mixing container to the applicating gun.



(3) Proper proportioning of the resin and catalyst. No possibility of incorrect proportions.
(4) No clean up of equipment or personnel.

Request NP1330.

GOOD PBX SERVICE

Continued from page 27

the way it is with human beings. The better the attendant knows each one of her customers, the easier it will be for her to help them.

Good treatment is made up of more than routine handling of a call. Each person that enters a business establishment through the telephone doorway is entitled to courtesy, understanding and intelligent and friendly assistance in seeing that his call reaches its destination promptly and without error.

An attendant should never become satisfied with the work she is doing. If she does she will stop trying. Her job is an important one. Dealing with people calls for aplomb, determination and steadfast purpose. Her efforts for self-improvement should be continuous. To do this, she should aim for goals that are just a little bit above her present accomplishments.

A good attendant does not underestimate a customer's intelligence. She judges his capabilities on the high side. It isn't always what she says, but it is her tone of voice that makes the caller feel that he is being talked down to. An attendant should regard each

New Irwin Pole-Bor Bit

gives non-stop boring

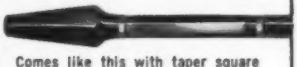
No stopping to clear chips, not even in creosoted poles

Now get easier, faster, non-stop boring action in telephone and power poles with the new Irwin 415T Pole-Bor bit. Chip flow is continuous. Special Irwin cutting head, twist angle, and smooth-polished hollows eliminate clogging and binding — even when boring clean through creosoted poles. Spur on head outlines hole ahead of cutting edge. Side lip then smooths hole, making it easier to insert bolts or pins.

And Irwin's exclusive and patented Adapter Shank chucks perfectly in both hand braces and electric drills to cut inventory costs by 50%, speed work on the job. All Irwin Pole-Bor bits are made of special high analysis steel, heat treated full length and machine sharpened for extra accuracy, longer life. Save time, save money. Order from your Irwin distributor.

Overall Length: Approximately 18", with 12" twist, 6" shank
12 Sizes: 9/16" to 1 3/16"

Irwin Adapter Shank fits both hand braces and electric drills



Comes like this with taper square shank for use in hand braces.

Cut off taper square shank. Use in both hand braces and electric drills. No wobble, no run-out.

IRWIN Wilmington, Ohio
every bit as good as the name

person she talks to as intelligent and capable as she, if she is to get the cooperation she desires and in order to eliminate the little imperfections in operating that annoy.

Words are tools that carry ideas and suggestions to others. They are also the means by which we gain knowledge. When an idea is expressed so it is easily understood, through using the right word in the right place, it becomes more effective. By her tone of voice, an attendant can express an honest desire to be helpful and an interest in the problems confronting the person on the other end of the line. A soft voice will please him; a quiet voice will calm and soothe him if he is in an angry mood.

Frequent contacts and discussions with the PBX management and extension users provide the PBX attendant with opportunities to improve her value in the work she does. She will be building up a good reputation and gaining respect for her job and for herself. She can work out with her people the ways and means for service betterment. She will gain their confidence and bring about a mutual understanding of what constitutes good service. Management and extension users are looking for guidance from the only one in their organization who can solve their PBX problems—the attendant.

The average customer will respond to courteous and considerate treatment. He is usually easy to understand, but occasionally the attendant may need help in dealing with him. At this point, management steps into the picture. One of management's functions is to assist the attendant in carrying on her duties efficiently and in the easiest and most pleasant manner. An attendant should discuss her operating problems with her supervisor and tell him how she plans to handle them. He may have a suggestion to offer. If not, he will, at least, feel just as she did when a customer shows his confidence in her by asking for assistance.

Through ingenuity and tact, an attendant can build up a sound service perspective in the minds of management and extension users. It sometimes isn't easy, but it can be done if she will conscientiously work toward eliminating conditions that cause dissatisfaction and bring about criticism. To accomplish such a program, she must seek the active interest and support of those with whom she works, in order to develop the best use of the telephone facilities for which she is responsible.

It is a well-known fact that courtesy is a valuable asset to any business, and if it is cultivated wisely it will help

NUMBER TS-23 - *Designed for carrier circuit use on all "point" type transposition hardware and at intervening non-transposition poles.*

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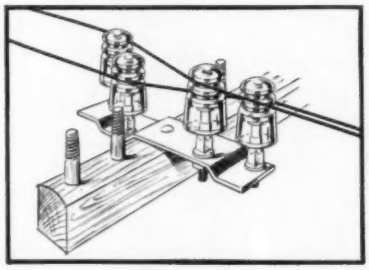
Hemingray has pioneered many insulator developments to keep pace with requirements, improve communication systems, assure you a dependable source of supply.

An up to date distribution system makes Hemingray Insulators available when you want them and where you need them.

Hemingray Glass Insulators are a product of Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.



This carrier circuit transposition developed by the Bell System takes only the crossarm width of one conventional pin.

World standard for quality Since 1870

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TELEPHONE CABLES

For Every Application

RURAL DISTRIBUTION

TYPE 177

Specifically designed for low cost telephone service expansion in growing rural and residential areas.

Available in No. 19 and 22 AWG in conformance with REA Specification PE-15 December, 1958.

Color coded for quick identification and easy splicing.

Eliminates use of crossarms by attaching to pole.

Aerial installations possible where open wire lines cannot be used.

Easy to install because of lightweight, self supporting and long spans.

Ideal for emergencies.

Excellent electrical characteristics from high dielectric strength, low loss, low capacitance polyethylene insulation.

Maximum weather resistance with tough PVC conductor jacket.

THE
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JEWETT CITY, CONN.

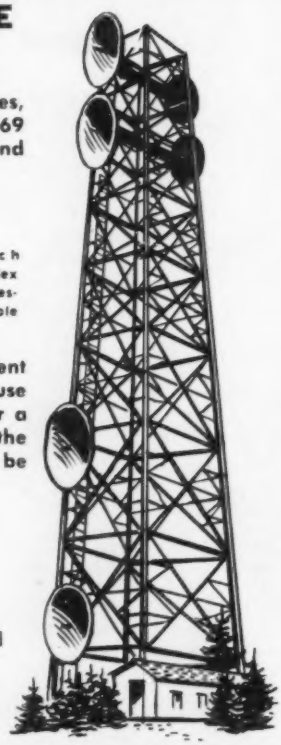
For Sale MICROWAVE SYSTEM

Pulse Time Modulated 2000 Mega Cycles, Federal Electric make, with a capacity of 69 voice circuits. Can be used for telegraph and teletype as well.

The System consists of:

1. 5 complete repeater stations for a 3 path system. Two repeaters are equipped for triple diversity reception.
2. Terminal stations each equipped with 2 multiplex units. A total of 23 message circuits are available on each multiplex.

This is a working system giving excellent service and is only being replaced because of the need for additional capacity over a very high usage route as a part of the Trans-Canada Telephone System. Will be sold on an "as is" "where is" basis.



For further particulars write:

A. G. Archibald

Vice-President & General Manager
Maritime Telegraph & Telephone Co. Limited
Halifax, Nova Scotia, Canada

or Telephone Collect to

HALIFAX 5-7281, Branch 215

3784

to widen the channels of trade. Big business knows that when the principles of courtesy are sincerely applied, profits take a decided slant upward. Courtesy is not a new thing. It is as old as creation. Perhaps the reason it is occasionally overlooked today is that it is so obvious, people don't think of it.

Occasionally, when a customer runs into a slow answer, he complains to the attendant that his call is important. It wasn't necessary for him to call it to the attendant's attention. To her all calls are important and she is eager to give everyone who uses her service top performance. The customer must have had an inferiority complex and was just trying to convince the attendant of his own importance. Big men don't have to intimidate to prove they are big.

Attendants' work is confining and tiring. How do they stand the strain of their intense work? An attendant of a large, busy PBX explained it to me this way:

"I do get tired, especially after a particularly hectic day, but (and her eyes sparkled as she continued) my work is never boring or tedious. Many calls I answer challenge my dexterity and skill. These I enjoy. I like operating, I like my company and I like the people I work with and this, I believe, is the crux of my success as an operator. Many of my calls are of a serious nature and take adept handling, but occasionally an amusing call breaks the monotony and makes my day more pleasant.

"I have worked at operating for a good many years and I have enjoyed every one of them. I cannot recall, at any time, wanting to exchange my job for any other kind of work. Sure I get calls by mistake, but I try to remember the person on the other end of the line did not ask me to be his wrong number so I try to keep the call on a friendly basis.

"Just the other day a pleasant-voiced man misdialed my board on several successive occasions. He was decently apologetic about it and we wound up with general pleasantries and I am sure we both felt better for the rest of the day. I know I did."

The vast majority of calls that reach a PBX are ordinary and are completed with the exchange of only a few words between caller and attendant. Any embellishment in handling such calls does not make for a pleasing service. When there is anything out of the ordinary about a call, or when its completion is held up, the attendant must be quick to recognize that something has gone wrong and so indicate by her tone of voice and manner. Should the attendant give the caller the impression that she has picked his call in particular because of the difficulty he is experiencing, she has won a friend. When she is responsive to the circum-

stances and shows a capacity to understand and a desire to please and interprets these feelings into competent, intelligent action, she has cemented the friendship.

Since the average user does not make any distinction between a central office operator and a PBX attendant, the job of operating a PBX grows in importance. The caller's impression of the attendant's entire company is strongly influenced by the spirit as well as the efficiency with which she works.

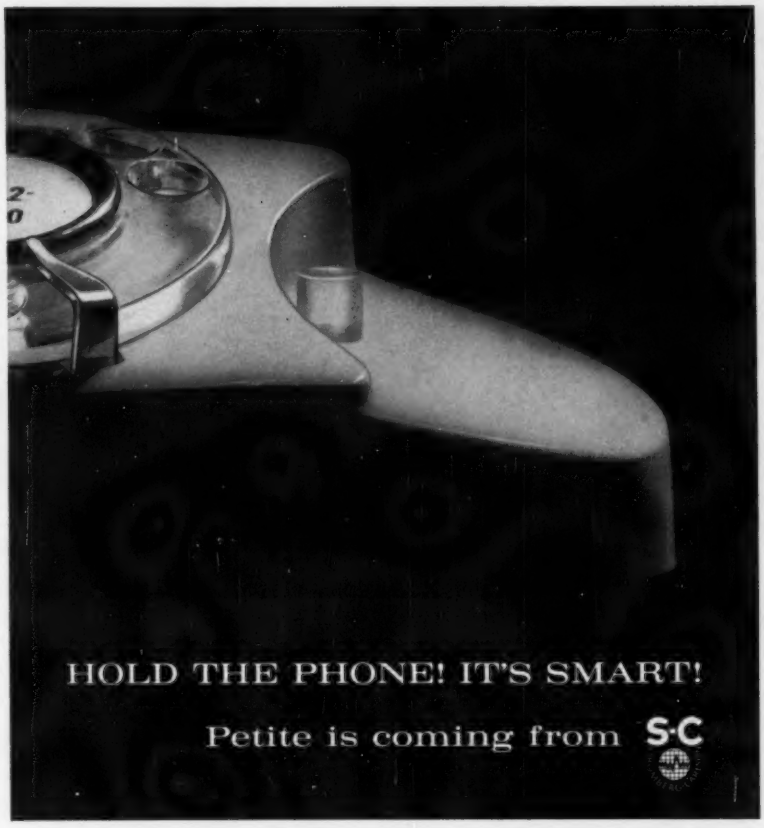
An attendant's job is to give personalized service and recognize calls requiring treatment not covered by routines, and to handle them to the satisfaction of the caller. Every PBX has a dissimilar operating problem. A set pattern for all situations cannot be established. But there are some broad aims that, if kept in mind, could bring about acceptable service:

(1) Building interest among extension users and management in giving service that fully satisfies.
(2) Recognizing the right concept of obligations and opportunities.
(3) Developing the necessary judgment.
(4) Becoming well informed about company policies and service objectives.
(5) Appraising results correctly.

Attendants who are happy with their working conditions and supervision, and are convinced of the company's interest in their work, will naturally reflect a sincere and friendly spirit in dealing with the people who enter through the telephone doorway. No amount of training or inspirational effort will produce a sincerely pleasing service from employes who are distressed. When an attendant is happy in her work she will find added incentive to apply the principles of her interest and enthusiasm just because it is more pleasant to work that way.

And, so, we can sum up good service at a PBX as, dealing with customers in such a way as to demonstrate that the company is made up of human beings—friendly, natural people, easy to approach and do business with and anxious to make its telephone service more useful to customers.

Happy is the attendant who has been drafted into service because of her ability and willingness to be helpful. Happy is the attendant who knows no discouragement, who presents no alibi. Happy is the attendant who seeks the best for those she serves. Happy is the attendant who serves for the good of the many and not for the personal gratification of her own ego. Happy is the attendant who interprets correctly the signs on the pathway that leads to good service. Happy is the attendant who considers operating an opportunity.



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CABLE FEEDER

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AERIAL TENTS
CABLE BENDERS
CABLE BLOCKS
CABLE LASHERS
COAXIAL CABLE TOOLS
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PORTABLE & POWER REELS

Distributed by GraybaR ELECTRIC COMPANY

PRESSURE TESTING KIT

COMPOUND

B, C, D, E, & G CABLE LASHERS

Special Purpose Tools To Specifications — Catalog on Request

Over 600 various items of Line Construction Tools, Maintenance & Pressure-Testing Equipment in stock for immediate shipment

Among those attending the recent Superior Cable Corp. "value selling" sales conference were (clockwise, left to right): Z. Grissinger, Tom Lyons, Jim Glenn, N. C. Cox, Fred Little, Homer Roelle, Vernon Guess, Jules Mack, Ronnie Westwood, Jac Johnson, Marvin Chennault, D. W. Hoffman, sales manager, Control Cables Division, and J. H. Bowman, vice president, sales.

"Value Selling" Stressed at Superior Cable Conference

At a sales conference held recently at Superior Cable Corp., Hickory, N.C., "value analysis" and "value selling" were discussed as essential elements of a positive approach to increasingly cost-conscious industrial management.

James H. Bowman, vice president in charge of sales, pointed out that today's high labor costs and taxes are often pretty inflexible expense items, and hence the economy target becomes parts and materials. In line with this thinking, more and more buying decisions are being made on the basis of economy at the point of use, rather than solely on original cost.

"Such value analysis," Mr. Bowman continued, "puts the purchasing agent squarely on the spot; he must show concrete savings as well as high quality purchases." A supplier who consciously tries to assist the purchasing agent with this value analysis is often the one who gets the orders.

Mr. Bowman stressed that the salesman who (1) finds ways in which expensive specialties can be replaced by

Looking for:
● Service ● Reliability ● Nationally Known Telephone Supplies

?

Then look to Lindsay, where prompt delivery of your order as specified is assured by fast, efficient, *personalized* service... backed by extensive warehousing of nationally known telephone supplies. Established in 1939, Lindsay is under second-generation management that believes a business can go only one way—forward.

LOOK TO THE LEADER...
LOOK TO LINDSAY

THE LINDSAY TELEPHONE SUPPLY CO.
360 East Highland Road, Northfield, Ohio
Telephone: IMperial 7-7181

standard items; (2) points out unrealistic specifications; (3) works for elimination of costly extras if they aren't really needed; and (4) never keeps silent when he feels he has something that may do a better job—this is the salesman who practices "value selling." This approach cultivates good customer relations by assisting the purchasing agent and industrial management to make value purchases on the basis of value analysis, Mr. Bowman stated.

Other areas covered during the Superior Cable sales conference included a business forecast, competition, products, company policies, and an over-all discussion of sales operations and problems.

IN THE NATION'S CAPITAL

Continued from page 18

ing exchange names in favor of more flexible digits. By way of unforeseen reaction, a plaintive letter came to this writer from an electric company official, who pointed out that telephone companies were not the only ones in the utility business with a name problem.

A good many electric utility companies have found out, somewhat to their amazement, that quite a few of their own customers confuse these taxpaying, investor-owned utility enterprises with city governments or other forms of government. Telephone companies have not had much of that kind of confusion, although some of the Independents who have tried to identify themselves with the city or other place names of their local service areas may have a problem here without realizing it.

The trouble began with the electric and gas utility people years ago, when quite a few decided to call themselves by the same name as the city in which they operated. For many years, there was a "New York Electric Co.," operating in New York City. This was subsequently absorbed by the present Consolidated Edison Co., which (by foresight or otherwise) minimized the name "New York" as part of its corporate title. In fact, if we look at most of our large cities we find—with some exceptions such as Boston, Baltimore, or Cleveland—that the local gas and electric companies have generally gotten away from the use of the city's name as part of their company titles.

Chicago, for example, gets its electric service from the Commonwealth Edison Co. and its gas service from People's Gas Light & Coke Co. Out in California, Pacific Gas and Electric Co. serves the greater part of the state. In St.

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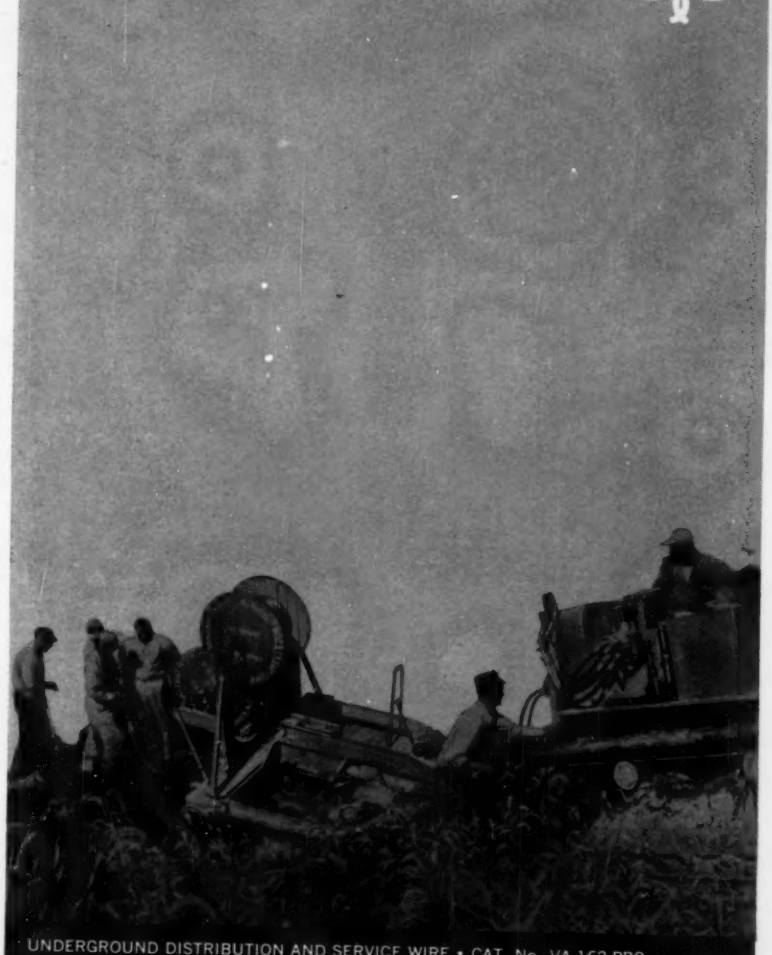
the source for all your buried wire needs



UNDERGROUND DISTRIBUTION AND SERVICE WIRE • CAT. No. VA-162-PBC

TWO PAIR BURIED SERVICE WIRE • CAT. No. VA-204-TSCW

UNDERGROUND SERVICE WIRE • CAT. No. N-162-TOC-DB

UNDERGROUND DISTRIBUTION AND SERVICE WIRE • PER REA PE-24

When you specify Alphaduct wires for your buried plant, or any of Alphaduct's quality line of telephone wires — you buy the know-how of the recognized leader in the manufacture of insulated wires for the Independent Telephone Industry.

National Distributors: Automatic Electric Sales Corp., Northlake, Ill.; Leich Sales Corp., 427 W. Randolph St., Chicago, Ill. Regional Distributors: Buckeye Telephone & Supply Co., Columbus, Ohio; The Lindsay Telephone Supply Co., Cleveland, Ohio; Pankey Supply Co., Charlottesville, Va.

ALPHADUCT

Wire-Saving Snubbing Action . . . with this

KEARNEY

SNUB-R-GRIP DROP WIRE GRIP

On poles or buildings this free-swinging drop wire tie provides a "snubbing" action stronger than the rated strength of the wire. This is possible because the unique spiral grip distributes the pull over a long length of wire. KEARNEY Snub-R-Grips are quickly installed and easily salvaged. Just wrap the wire (twisted pair, parallel or synthetic-jacketed) into the grooved spiral. A portion of the groove's inner surface is specially coated to give maximum non-slip grip . . . without damage to insulation.

For Better Construction . . . Safer Maintenance

Specify 288

KEARNEY PRODUCTS

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Canadian Plant: Guelph, Ontario

Louis the Union Electric Co. does the kilowatt business while the Laclede Gas Co. sells the therms.

What's wrong with using a city's name as part of the company's title? There is nothing wrong with it at all. But it can lead to some confusion. The reason for dropping city names from corporate titles probably resulted from the expansion of such utility services into such widespread surrounding territory, including many other cities—that identification with a single city would be misleading.

Probably the original idea of using the city's name was to give the company, by association, some appearance of stability and identification as a recognized public service institution. Then, there was the factor of hometown pride which may have played a part. But it is this very identification with the city which is now plaguing some of the gas and electric utilities. They have found, belatedly, that their own customers think they are being served by government agencies.

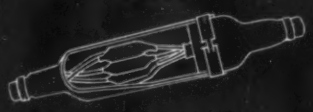
Take the case of the Rochester Gas & Electric Corp.—which serves Rochester, N. Y., and a good bit of surrounding territory. Rochester Gas & Electric has discovered that many people associate its name with the New York State City in which it operates. These people are under the impression that the city is responsible for providing their gas and electricity. Now it is surprising how some people react when they think the government, including city government, is providing anything. Some think that such services ought to be provided for nothing, and certainly not for any profit. The New York City subway is a pretty good example. It runs a 50 million dollar a year deficit without taxes.

Back in 1957, Rochester Gas & Electric Corp. had an independent organization conduct a survey among a random, but representative, number of city residents. They were asked the question: "Who provides the gas and electric service here?" Only 60 per cent said it was a business concern; 20 per cent said the city did the job; and 19 per cent either did not even know, or care less.

Those results surprised Rochester Gas & Electric Corp. It was hard to take seriously. But last year (1959), the survey people took another poll of a similar segment of the population. This time the results were even more unbelievable. The percentage of those who thought the city was supplying them with their gas and electric service had actually *increased!* In other words, 50 per cent correctly answered that a business corporation supplied the service (as against 60 per cent for 1957);

ROBERTSON

Splice & Connector Cases



reduce splicing time from hours to minutes

Robertson Cases provide an efficient system for splicing and assembling of wire products and lines. The sleevelike design is easily joined and separated providing a case for smaller splices and cases. A beryllium copper clamping ring seals the case making it moisture and dust proof.

Made of polyvinyl chloride: tensile strength 2500 psi; dielectric strength 400 volts/mil thickness. Resists organic and inorganic acids and alkalis, fungus. For temperatures 250 F. to -65 F. Available in other materials to meet your specifications.

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24 per cent said the city was responsible (as against 20 per cent in 1957); and 14 per cent said they did not know (as against 19 per cent in 1957).

The company was shocked. There was no satisfactory explanation as to why the percentage of ignorance on this point had jumped so high in two years. In any event, the company decided to do something about it. It started a "name" campaign in a hurry. It began printing, in red, on all its gas and electric bills "Investor-owned with More than 18,000 Shareholders." (The company now has over 20,000 shareholders.) A similar slogan was used on all Rochester Gas & Electric advertising.

What have been the results so far? Fairly gratifying, according to a recent mail survey which the company took on its own. Eighty-one per cent replying to the survey correctly identified their gas and electric supplier with a business concern; only 14 per cent said it was the city; and less than 8 per cent did not know. Encouraged by this, the company is campaigning harder than ever.

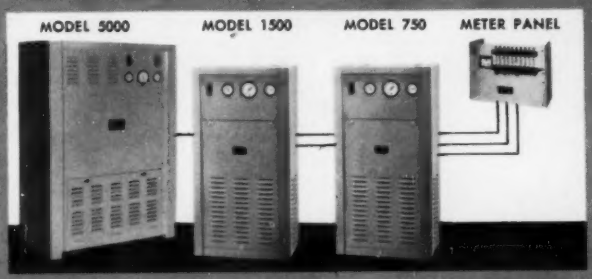
As already suggested, there may be a moral in this for a good many Independent telephone companies — those still using city names. There are quite a few of them. All of the Bell operating companies have gotten away from city names with the exception of Cincinnati & Suburban. But there may still be some confusion at the state level with respect to those operating companies which use the name of the state, such as "New York Telephone Co." Illinois Bell, Ohio Bell, etc. It would be interesting to see what proportion, if any, of their subscribers think their telephone company is being operated by their respective service area states. Some New Yorkers may even think the city is running their telephone service.

The solution would hardly be a change of the name at this late date. Rochester Gas & Electric Corp. found that out. It decided on the intelligent alternative—consumer education, as to just what is what. And, if by chance, you are wondering what difference it makes whether the customers think their service is provided by a business-managed company, or by some governmental agency, consider these factors:

(1) Government utilities pay no taxes, therefore, a customer who thinks he gets his utility service from a government agency is not aware that any tax burden is being borne, or that a good proportion of the dollars he pays for service must go for taxes.

(2) Government utility agencies for the most part are not regulated. There-

a PUREGAS Pressure System for all Telephone Exchanges



PUREGAS refrigeration type Air Dryers are available with capacities to pressurize aerial and underground cables in any size Telephone company..

PUREGAS Air Dryers are fully automatic, complete units — each meticulously tested before delivery.

FEATURES

Capacity . . . . . 750 to 5000 cu. ft.
Delivered Air Humidity . . . . . under 2% at 70°F.
Delivered Air Pressure . . . . . 0 to 15 psig, adjustable
Automatic Safety Controls:
Adjustable high and low pressure alarm.
High humidity alarm (5% at 70°F.).
Thermal overload protection on switches and motors.

These Air Dryers are simple to install and relatively maintenance free because they have only one moving part in the airdrying circuit — the refrigeration compressor.

Air Dryers, Meter Panels and a full line of accessories can be ordered direct from your local distributor.

Write for complete details

- *Data Sheets on Model 750, 1500, and 5000 Air Dryers*
- *"Why Cables Should Be Pressurized"*
- *"Desert Dry Air . . . a boon to the Telephone Industry"*
- *Cost Comparison . . . Air Dryers vs. Nitrogen*
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PEC PUREGAS EQUIPMENT CORP.
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Trenching Costs Only Pennies Per Foot with the ARPS TRENCH-DEVIL

Costs Less to Buy! — Costs Less to Operate! — Costs Less to Maintain!

LOOK . . .

★ **Speeds** up to 1200′ per hour; depths — 1½′ through 4½′; widths — 2¾″ through 8″.

★ **Power Boom Control** permits fast raising and lowering of boom for rapid trenching; depths are accurately controlled, eliminating guesswork.

★ **Reversible Dirt Conveyor** is standard equipment — deposits dirt at selected distance from either side of trench. In only 60 seconds, conveyor may be switched from one side to the other.

★ **Easy Transporting** — under its own power, the self-propelled Model MA-2 may be run up skids, into a pickup truck, or driven at 2¾ M.P.H. One man loads — transports — unloads — trenches.

★ **Smaller Model JR** Trench-Devil digs 2¾″ or 3½″ wide, up to 20″ deep. Simple, one-man operation and fast — speeds of 15 feet per minute at a 12″ depth.

Write today for full details on both models. Dept. T.

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NEW HOLSTEIN, WIS.

TRENCHERS • HALF-TRACKS
BULLDOZERS • UTILITY BLADES

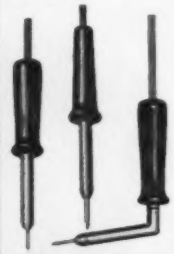
NOW in 50 WATTS for MINIATURE and SUBMINIATURE PRODUCTION SOLDERING JOBS

the *NEW,* American Beauty BANTAM "X" series

⅛″ TIP

Designed with 50 watt input, these fine soldering irons will give greater productivity and do industry's most exacting soldering jobs easier, faster, better. SLOTTED STAINLESS STEEL CASINGS MAKE THE HANDLES REALLY COOL, ending operator complaints. There's no waiting or fumbling with these light, flexible tools — they're always ready. American Beauty soldering irons are known the world over for their dependability, durability and efficiency. Learn more about these fine soldering tools today.

Shown below are other shapes and tip-size irons available in the BANTAM "X" series.



204-B

¾″ TIP

YOU CAN'T BEAT A SOLDERED CONNECTION

WRITE FOR DESCRIPTIVE CATALOG SHEET, FORM NO. 222-CT

AMERICAN ELECTRICAL HEATER COMPANY
DETROIT 2, MICHIGAN

fore, the misinformed customer who thinks he is getting service from the government is not aware that there is independent regulatory supervision of his rates and service to which he can appeal if he is dissatisfied.

(3) Already touched upon is the tendency of some citizens to regard any form of supply by the government as a semi-public welfare service, to which he is entitled (such as hospitals, highways, education, etc.) even when he cannot always pay for it.

All together this confusion of responsibility, brought about by association of utility names with that of government agencies, is something that should be cleared up as quickly and as effectively as possible. The trouble is that the company management may not be even aware that such a situation exists. The experience of the Rochester Gas & Electric Corp. proves that. So, if its too late to change the name, it's not too late to let the public know what the name stands for—private enterprise!

Van Walleghem, Rice In New Virgin Islands Posts

The election of Andre Van Walleghem (cq) as executive vice president and a director of the Virgin Islands Telephone Corp. was announced on Apr. 28 by Stephen H. Larrabee, president. At the same time, Patrick M. Rice was named comptroller and treasurer.

Mr. Van Walleghem becomes the senior executive officer of the company resident in St. Thomas. The company was formed in October 1959, when ITT acquired the telephone system from the Virgin Islands government and undertook to modernize and expand the service.

Mr. Van Walleghem joined the ITT System in 1927 with Bell Telephone Mfg. Co., Antwerp.

For the past 25 years, he has been associated with ITT's Peruvian telephone operating company, most recently as superintendent of technical planning and development.

He holds electrical and mechanical engineering degrees from the Technical Institute of Brussels.

Mr. Rice, a native of Wisconsin, has held accounting positions with the United States and Virgin Islands governments.

He has bachelor's and master's degrees in commercial science from the Benjamin Franklin University, Washington, D. C., and served with the U. S. Marine Corps in World War II.

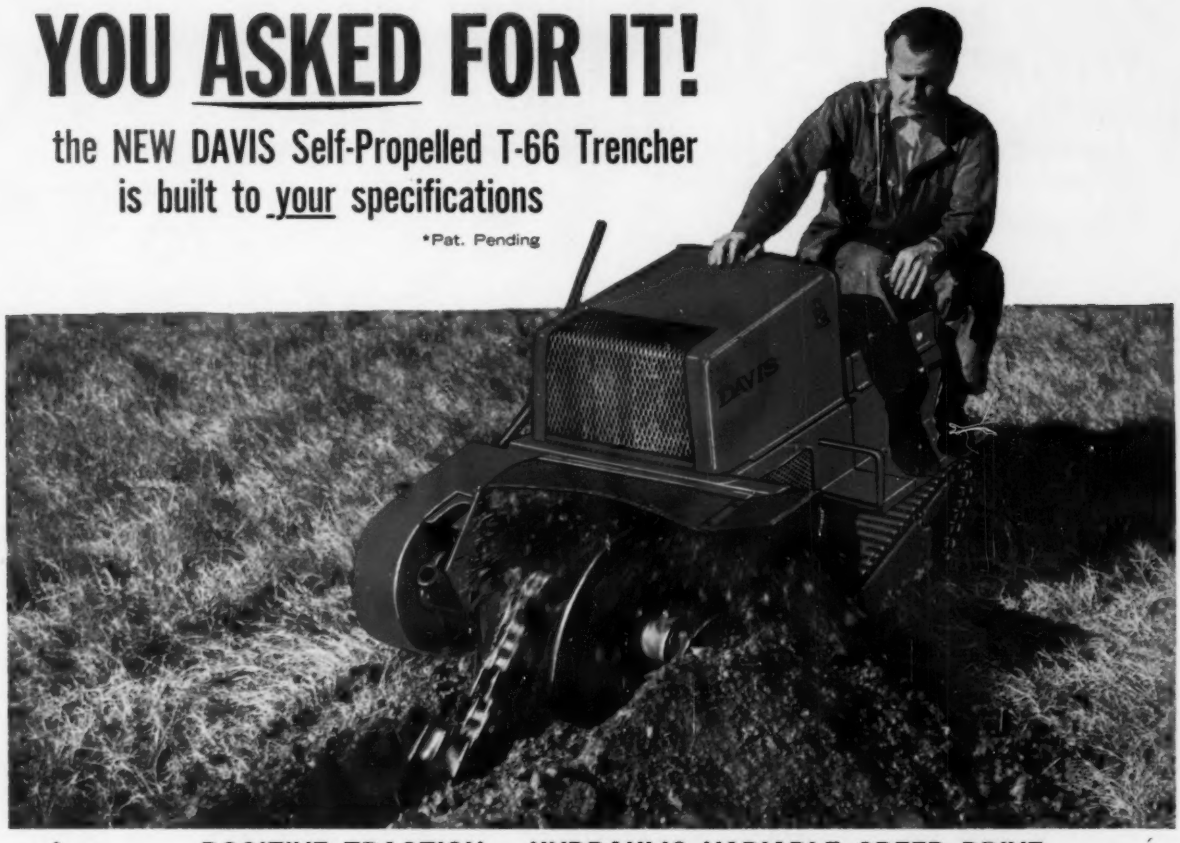
Worst Lie

"The most intangible, and therefore the worst, kind of a lie is a half truth . . ."—WASHINGTON ALLSTON.

YOU ASKED FOR IT!

the NEW DAVIS Self-Propelled T-66 Trencher is built to your specifications

*Pat. Pending



features **POSITIVE TRACTION...HYDRAULIC VARIABLE SPEED DRIVE CONVENIENT CONTROLS...VIRTUALLY EFFORTLESS OPERATION**

DOES IT S OWN BACKFILLING

The Davis T-66 has a low-cost, well-designed, hydraulically controlled angle backfill blade. The T-66 has two-speed drive with instant forward or reverse, powered steering, independent left and right positive clutches and disc steering brakes for maneuverability in backfilling operations.

The new, self-propelled, crawler-type Davis T-66 is the most advanced utility trencher available. It's designed and produced after an exhaustive survey revealed the features users really wanted. Every one of its 1350 pounds is packed with performance to handle 9 out of 10 jobs with amazing efficiency and economy; yet, it's priced much less than you would expect.

Positive traction, accurate speed control, hydraulic variable speed drive, hydraulically operated boom, preloaded shock-absorbing boom, convenient — virtually effortless — control, and compact design (only 37″ wide) are just a few of its 33 profit-producing features.

It digs 3″ to 4″ wide to 66″ deep or 12″ wide to 30″ deep, and at varying depths and widths in between. It trenches from 1-ft. to 12-ft. per minute depending upon soil conditions. Only **two** different **tooth combinations** are required to **handle all digging widths.** The Davis T-66 is quality built in every part.

ASK ABOUT ITS 90-DAY UNCONDITIONAL GUARANTEE

the DAVIS PUP TRENCHER digs by itself!

Digs where others fail because it's self-propelled by positive, 6-speed winch drive. Digs 2″ or 3″ wide to 36″ deep; 4″ wide, 18″ deep. Proven to be profitable. Low cost.

the DAVIS HUSTLER UTILITY TRAILER

Designed to carry T-66. Versatile for many uses. Has 2000 lb. capacity, 48″ x 84″ deck, low center of gravity and load equalization regardless of load distribution.

DAVIS MFG. INC.

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Please send me literature and name of my distributor on the Davis T-66____ Davis Pup____ Davis Hustler Utility Trailer____.

NAME_____

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T6-60-2

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The Head Set Ear Cushion
Designed Especially for
Switchboard Operators

"TELEPHONE COMPANIES"
May now purchase
TELE-MUFF Jrs.
For their Operators,
along with other
stock items, from
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NEW INSULATORS
HEMINGRAY #9

price 3¢ each
order of 1000 or more
F.O.B. Los Angeles, Calif.

NEW POLE BRACKETS

1⅝"x2"x12" Oak Creosoted. Standard one inch threaded end. PRICE: only 2¢ each for orders of 1000 or more.

IMMEDIATE SHIPMENT
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GEORGE M. ACKER CO.
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LOS ANGELES 5, CALIF.

Helpful Literature

TECHNICAL JOURNAL—The Automatic Electric Co. has made its April issue of the *Automatic Electric Technical Journal* available to telephone engineers and others interested.

Highlights of the issue, according to AE, include descriptions of two new relays—the Type 59 Codel relay, and the Class W "Wire-Spring" relay.

Also included are articles on negative-impedance repeaters, the laboratories' new Type 180 toll test board; and a new transistorized amplifier, a plug-in unit designed for use on toll service desks.

The *Technical Journal's* series on electronic switching continues with a report on the development of a 100-line electronic private automatic telephone switchboard. Request HL582.

•

CONSTRUCTION ACCESSORIES BULLETIN—The Preformed Line Products Co. has published a bulletin featuring 20 telephone accessories used by companies for the construction, repair, and maintenance of lines.

The Preformed bulletin presents the products in groups, according to the type of construction for which they are designed as follows:

For guy and messenger strand: Guy-Grip dead-ends, Preformed splices and lashing rods.

For open line wire and messenger: Preformed communication ties, dead-ends, splices, splint & tie assemblies, plastic spacer units, plastic pinch brackets, and spiral plastic vibration dampers.

For one-pair aerial distribution wire (C-Rural): Preformed dead-ends, and various types of tangent supports.

For rural distribution wire (B-Rural): Preformed gritted armor rods (adapters), aluminum alloy armor rods, splices, and dead-ends.

For plastic-covered self-supporting telephone cable: Preformed plastic grip dead-ends, line guards, and tangent support clamps.

For service drop wire: Preformed dead-ends.

Request HL583.

•

FASTENING TOOLS—Issuance of a new catalog on Ramset powder-actuated fastening tools and accessories has been announced by Ramset Fastening System.

Containing technical data and illustrations, it includes for the first time information on working loads. Data on Shure-Set, a hammer-in fastening tool, is also given.

Ramset powder-actuated fastening tools are described as utilizing the energy of a fired blank cartridge and are said to enable workers to set drive pins or threaded studs into concrete, or as much as one inch of steel, by pulling a trigger.

Ramset states that both its powder-actuated and its Shure-set systems eliminate the necessity to drill and set expansion anchors. Request HL584.

•

TRANSISTOR APPLICATION GUIDE—The Lansdale Division of Philco Corp. has made a transistor application

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

HL582_____; HL583_____; HL584_____; HL585_____; HL586_____.

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This instrument utilizes the heterodyne principle with balanced modulation and highly selective crystal filters which achieve the high resolution needed for accurate amplitude measurements of Carrier and Microwave Sub Carrier channels.

Direct reading in DBM for 135 and 600 ohm circuits or bridging.

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SPECIFICATIONS
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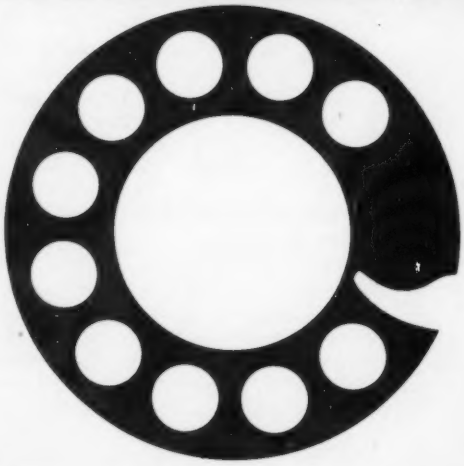
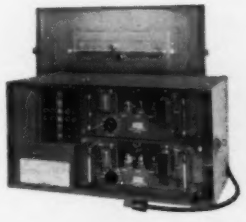
Frequency Range: **300 cycles to 400 Kc.** Level:—72 dbm to + 32 dbm (full scale) at 600 OHMS Accuracy: ± .5db from —80 to + 32 dbm; 1 to 400 Kc. Selectivity: 6db down **80 cycles** off: 60 db down **480 cycles** off. Wider crystal filter and demodulator for monitoring SSB, AM, and FM—**internal speaker** and headset jack. Spurious Response: Below 60db, low intermodulation: Below 60 db. Power Requirements: 115V, 50/60 cycles—48 Watts. **Weight 28 lbs.**

GET ON THE ALTEC LINE—for improved telephone equipment



The best number in your book—the one that connects you with the Altec line. For performance, reliability, and servicing ease, the Altec line of amplifiers and equipment have won a resounding vote of confidence from the industry. Precision-engineered to meet your most exacting specifications, Altec products offer the improved design that makes maximum use of minimum space—and the "plus" that makes the difference—Altec quality.

The 455A Amplifier is a transistorized repeater type amplifier wrapping up a compact package of gain for telephone circuit use. Incorporates the gain, power handling capacity, frequency response, plug-in features in the physical size of vacuum tube type repeater. Ten repeaters go in the same standard rack mount used for vacuum tube types. Operates on 48 volt DC @ 22 ma. Since it is transistorized no 130 volt supply is needed. For details, write for Altec Lansing Bulletin #13385.



The S-17 Amplifier System is designed for the highest quality program transmission over telephone circuits. A single portable and rack-mountable housing contains two (2) amplifiers and accessory jacks and equalizers so that two (2) complete circuits can be maintained without cross talk. Write for Bulletin #12835.

For complete information about Altec telephone and paging equipment write to the address below or call PRospect 4-2900 in Anaheim or ALgonquin 5-3636 in New York.

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1515 S. Manchester Ave., Anaheim, Calif.
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guide available. The guide, in booklet form, indicates transistor types for each major application. Transistors are classified in terms of one or two important parameters.

The information is primarily presented in graphs and curves for simplicity. Data given by charts is intended, the company says, to be reasonably typical of performance that has been obtained in practical circuits.

Applications covered include: communications circuits (tuned amplifiers and related circuits); untuned amplifiers; switching circuits (computer applications); and switching circuits (non-computer applications).

Lists of pertinent transistor data sheets containing circuit design information are included with each application treated in the guide. Philco transistor data sheets can then be obtained for making a final selection. Request HL585.

•

CENTRAL OFFICE COURSES—"AE Telephone Training School" is a new brochure which describes the training curriculum offered to operating companies by Automatic Electric Co.

The booklet shows how students learn operation and maintenance of central office equipment through class room study of theory and on-the-job practical training.

Enrollment procedures, and details of the Telephone Central Office Maintenance, and Strowger Automatic Toll Ticketing (SATT) courses offered are also included in the 12-page pamphlet. Request HL586.

•

OBSTACLES TO TECHNICAL CREATIVITY—Industrial management may find a new aid to improving engineer/scientist creativity in *Barriers to Creativity*, a recently completed study by Deutsch & Shea, Inc., technical manpower consultants.

Designed for distribution to technical staff members by industrial managements, the booklet explores ways to recognize and overcome obstacles to the creative process confronting technical professionals.

The 30-page booklet is part of a series dealing with individual creativity —one of the most important aspects of professional development.

Other titles in the series are *Creativity—A Bibliography* and *How To Increase Your Creative Output.*

The subject has also been explored from management's viewpoint in a book, *Company Climate and Creativity.*

Copies of the new study will be available singly at $1.50 or in a quantity at special rates.

Inquiries should be directed to the Industrial Relations News, 230 West 41st Street, New York City.

IOWA CONVENTION

Concluded from page 33

exchanges in Iowa have been converted to dial in the past 10 years.

Only about 175 of the over 700 Independent exchanges in the state do not have dial service, he said. By comparison, in 1942, only nine Iowa Independent exchanges furnished dial service.

Presenting another speech to the convention was Dr. Henry H. Lewis of Sioux Falls, S.D., whose talk was entitled, "Can You Take It With You?"

Also on the Iowa program was a panel moderated by Harold Thompson of Clear Lake. Delivering short resumes on various topics were:

Frank Baird of Des Moines handling the subject of transmission.

Charles Byers of New London, buried plant.

Edward G. Carlson of Creston, direct distance dialing.

Arthur G. Kiesling of Kiesling & Gilbertson, Madison, Wis., financing and accounting.

Ed McKean of Great Bend, Kan., safety.

The drama department of Drake University, Des Moines, presented a Telerama, directed by Professor James J. Fiderlick, department head.

The convention elected the following as directors:

Howard Amick of Des Moines; Earle G. Bellamy of Knoxville; Roy E. Brandel of Mt. Pleasant; Edward G. Carlson of Creston; W. H. Fowler of Pella; Arthur E. Long of Sloan; Clyde McFarlin of Montezuma; John J. McIntosh of Cedar Rapids; H. Filmore Melick of West Liberty; Harry Miller of Great Bend, Kans.;

C. C. Pearce of Riceville; Gene Daubendiek of Jefferson; V. D. Peck of Primghar; A. W. Sanders of New London; Harold Thompson of Clear Lake;

L. E. Travis of Newton; J. L. Trevillion of Chariton; Joseph L. Van Horn of Grinnell; Ross K. Vernon of Sioux Center; Kenneth A. Young of Ft. Dodge; E. B. Zerwas of Manning and W. F. Miller of Des Moines.

Honorary directors are Henry B. Melick of West Liberty and Lloyd F. Morrison of Grinnell.

The directors elected as officers, President, Mr. Thompson; first vice president, Mr. Sanders; second vice president, Mr. Zerwas, and executive secretary, William F. Miller.

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CONTAINING FOUR TO SEVENTY-SIX COILS

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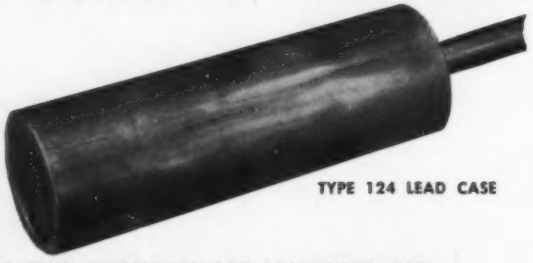

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- PLASTIC STUB ASSEMBLIES ARE ARMOURED AND SEALED IN THERMOPLASTIC COMPOUND TO INSURE PROTECTION FROM MOISTURE.

These assemblies can be equipped with voice frequency coils, Types C632 (88 MH) and C638 (44 MH) coils are for subscriber loading. Types C642 (88 MH) and 641 (44 MH) coils are available for use on quadded interoffice and toll cables. (Also available with MF10 and MF11 units.) Special Coils can be made to meet other requirements.

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For Stromberg-Carlson Harsha Is Patent Counsel

The appointment of H. Vincent Harsha as patent counsel of General Dynamics Corp.'s Stromberg-Carlson Division has been announced by Edward Diamond, vice president and counsel for the division.

H. V. HARSHA

Mr. Harsha went to Stromberg-Carlson from the Raytheon Mfg. Co., in Waltham, Mass., where he was manager of the patent processing section. Earlier, he was a patent attorney for the Bell Telephone Laboratories, in Murray Hill, N. J., and for the Collins Radio Co., in Cedar Rapids, Ia.

Mr. Harsha is a native of Iowa City, Ia., and a graduate of the State University of Iowa, where, after receiving bachelor's degrees in both economics and electrical engineering, he also earned a Juris Doctor degree. He is a member of the American Patent Law Association and of the Iowa State Bar Association.

During World War II, he served as a communications officer aboard several destroyers in the U. S. Navy, and in 1950-52, during the Korean conflict, he returned to naval service as communications officer for the commander, Destroyer Squadron 13.

Kellogg To Build New Miss. Manufacturing Plant

The Kellogg Switchboard & Supply Co. will build a new plant to house its telephone manufacturing operations in Corinth, Miss., George A. Strichman, president, has announced. The 82,500-square foot building will triple the existing company facility at Corinth, and is expected almost to double the present number of 225 employes over the next two years, he said.

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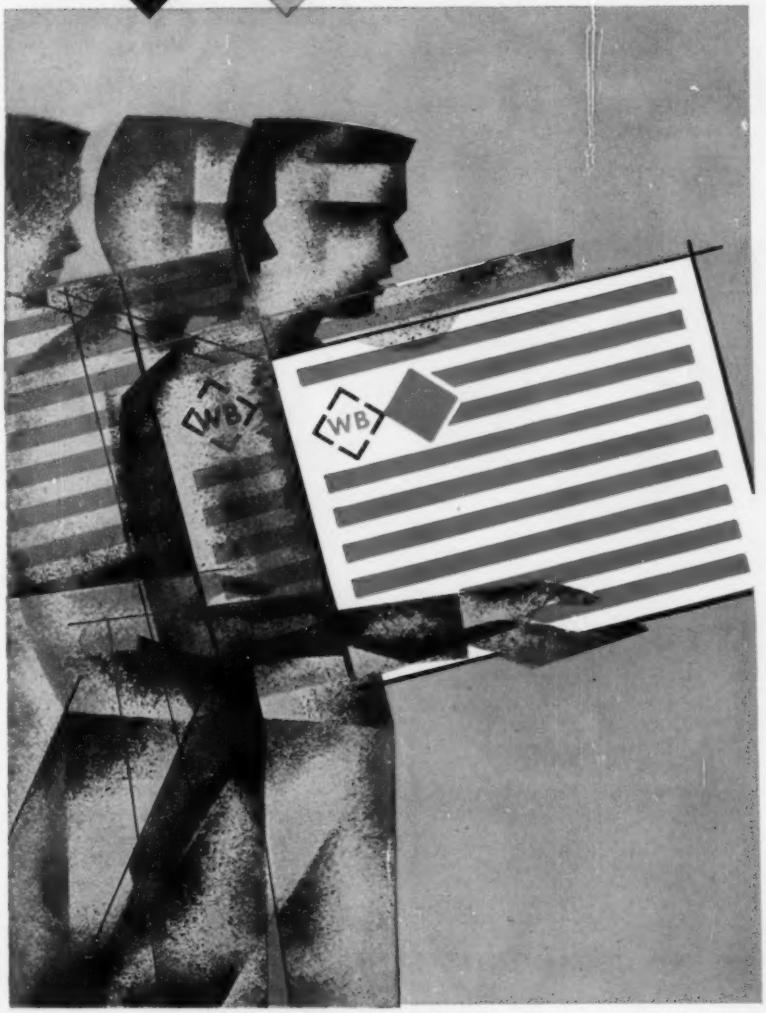

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Thornley, Smith Regional Managers for Kellogg

Charles B. Thornley recently has been appointed North Central region manager, and J. O. Smith has been named Southeastern region manager at Kellogg Switchboard & Supply Co.

C. B. THORNLEY

In making the announcement, Charles J. Trees, vice president of marketing, said Mr. Smith would replace Mr. Thornley in Atlanta, Ga., while the latter would headquarter at the company's offices and warehouse in Chicago.

In his new position, Mr. Thornley is responsible for all commercial sales activities of the company in a 10-state area, which includes Illinois, Indiana, Ohio, West Virginia, Wisconsin, Minnesota, North Dakota, South Dakota, Montana and Wyoming. The North Central region is one of six established from coast to coast under Kellogg's decentralized program.

Mr. Thornley has been with Kellogg since January, 1958, when he became operating manager of the Western region at Burlingame, Cal. He was promoted to manager of the Southeastern region last November.

J. O. SMITH

Previously, he was employed by RCA Victor Distributing Corp., working at the Chicago and Davenport, Ia., plants progressively as accountant, operating manager and sales manager.

A native of Scottsburg, Ind., Mr. Thornley attended Purdue University and was graduated from Indiana University with a bachelor of science degree. He served in the U. S. Navy and the Air Force during World War II.

Mr. Smith will be directing all commercial sales activities of the company in Alabama, Georgia, Florida, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Virginia.

A native of Baytown, Tex., he attended Lee Junior College in that city and Sam Houston State College in Huntsville. He served in the U. S. Army from 1948 to 1951.

Corrections in Nelson's "VNL" Article

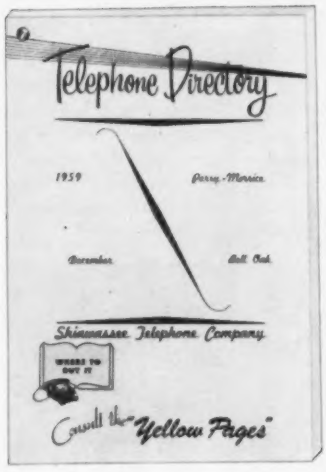
We have received the following corrections in Carl H. Nelson's article "Independents' Part in National Transmission Improvements," which appeared in the March 26, 1960 issue.

(1) In the second column, page 22, the VNL factor for H-88 loaded exchange cable is indicated as .4 db per mile. This should read .04 db per mile.

(2) In the second column, page 23, following "Resistance Design Chart . . . guide lines," paragraph (2) should read: "Use the high gain telephone instrument only where needed such as on 26 gauge cable loops over 10,000 feet; 24 gauge cable loops over 13,000 feet; 22 gauge cable loops over 17,000 feet, and 19 gauge cable loops over 21,000 feet."

Paragraph (3), column 3, page 23, should read: "Apply complete H-88 loading to all cable loops which extend beyond 18,000 feet."

(3) In the third column, page 23, the first sentence of the last paragraph should read: "Solution: Supervisory and signal limit for the equipment is 1,200 ohms."



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Phillipsdale, R. I.
Pittsburgh 33, Pa.
Portland 5, Oregon
Roanoke 15, Va.
St. Louis 10, Missouri
Salt Lake City 15, Utah
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Seattle 1, Washington
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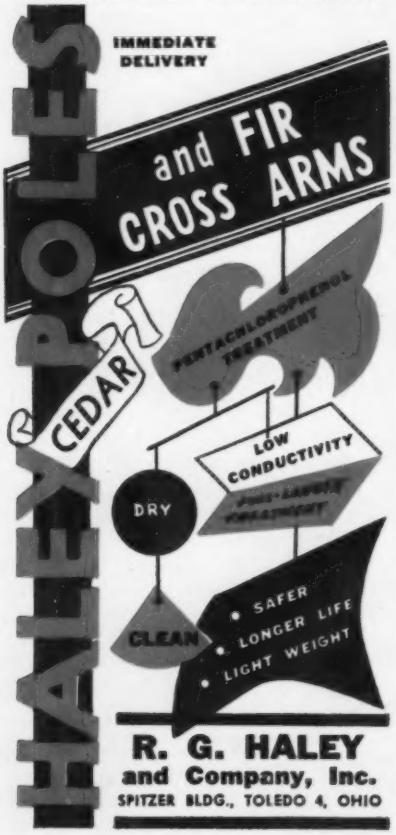

Mr. Smith went to Kellogg eight years ago. He advanced from salesman, through Western region sales manager, and division sales manager of the Southeastern region to his present position. He had previously been employed as a salesman at Spencer Chemical Co., Dallas, Tex.

Freeland to Commonwealth Services Rate Department

Frank Freeland has joined the rate department of Commonwealth Services, Inc. Mr. Freeland will work with Commonwealth clients on problems involving all phases of rates and regulatory matters, according to W. B. Tippy, president of the management and engineering consulting firm.

FRANK FREELAND

During the past six years, Mr. Freeland has been an independent consultant to public utilities and also served as an administrative officer for the United States Department of the Interior on special assignments.

From 1947 to 1954, he was responsible for all rate and regulatory matters of the Hawaiian Telephone Co., Honolulu, and advanced to the position of assistant treasurer and budget director.

While in Hawaii, he served as a member of the governor's Tax Study Committee and as chairman of the Hawaiian Economic Conference for Public Utilities.

Prior to 1947, Mr. Freeland was a rate engineer for the California Electric Power Co. and for the California Interstate Telephone Co.

V. Christian Named by Ramset

Victor Christian Jr., has been named a sales representative in Georgia for Ramset Fastening System, part of the Winchester-Western division, Olin Mathieson Chemical Corp., it was announced by R. H. Benedict Jr., sales manager.

Johnston Head of Research For AE Industrial Systems

Leith Johnston has been appointed director of the newly created industrial systems development department of Automatic Electric Laboratories, subsidiary of General Telephone & Electronics at Northlake, Ill.

LEITH JOHNSTON

Mr. Johnston will direct the new department which will provide research and development for the industrial systems program of Automatic Electric Co.

Formerly a laboratories senior project engineer, Mr. Johnston joined AE in 1927 as an inspector. During the 1930's, he served as general foreman, and night superintendent.

Since joining the laboratories organization, his principal assignments have been in design work on totalizator and stock quotation boards, and the development of fully automatic teletypewriter systems for the U. S. Army Signal Corps.

He is a graduate of Reed College, Portland, Ore., and is a registered professional engineer of Illinois. He holds membership in the American Institute of Electrical Engineers, American Society for Metals, Armed Forces Communications & Electronics Association and in the Western Society of Engineers. Mr. Johnston also is credited with 11 patents in the totalizator and teletype switching fields.

Altec Forms Own Sales Group, Appoints Engineering Heads

Altec Lansing Corp. recently announced the formation of a national sales organization to provide sales and engineering assistance for telephone

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NEW COLOR-CODED HANDLES

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equipment customers, according to Alvis A. Ward, president of the company.

This national sales organization will be divided into 10 areas with a regional salesman in charge of each area. This organization, states Mr. Ward, will eliminate the two-step distribution system.

H. S. Morris, present sales manager of Altec Lansing, will be in charge of the new organization.

All of the salesmen, according to Ward, will have experience in industrial communication systems. Present system of distributing Altec products through Graybar Electric Co. will be discontinued, the announcement said, effective June 30, 1960.

•

Altec also has revealed the appointment of Alexis Badmaieff to chief engineer, acoustics-transducers, and William H. Johnson to manager of the engineering and technical information department.

Union Carbide Appoints Wurtzell Market Manager

Fred Wurtzell has been appointed manager-wire and cable market for the Union Carbide Plastics Co.

According to E. R. Young, product market manager, Mr. Wurtzell will be responsible for the company's participation in the wire and cable industry. His duties will include defining opportunities and objectives, as well as the sales planning to achieve them.

FRED WURTZELL

Mr. Wurtzell will be located at the company's New York office.

Upon graduating from the University of Illinois with a bachelor of science degree in chemical engineering, Mr. Wurtzell joined Union Carbide in 1942.

Most of his company career has been spent in sales of extrusion materials.

In 1958, he was transferred to the New England region as assistant regional manager—the position he held until his new assignment.

AE's R. E. Stoffels 1st in AIEE Chicago Competition

Robert E. Stoffels, a member of the technical staff of Automatic Electric Laboratories, Northlake, Ill., has won first place in the section papers competition of the American Institute of Electric Engineers, Chicago chapter.

His paper entitled "'Datacom' Unit —An Experimental Data Transmission Subset" concerned the development of equipment for the transmission of digital data over telephone lines. The prize winning paper is now under consideration for AIEE district award honors.

Mr. Stoffels will present a similar paper in June at the AIEE's summer general meeting in Atlantic City, N. J. He is also slated to speak at the National Conference on Electromagnetic Relays at Oklahoma State University. The Stillwater, Okla. presentation outlines "A Practical Method for the Prediction of Relay Operate Time."

An electrical engineering graduate of Northwestern University, he joined the subsidiary of General Telephone & Electronics in 1949 as a co-op student. Since 1952, he has been engaged in research and development work on data transmission systems. He serves on the data communications and transmission committees of the AIEE, and the Electrical Industries Association and is a member of Eta Kappa Nu.

Spur to Thinkers

"Books won't stay banned. They won't burn. Ideas won't go to jail. In the long run of history, the censor and the inquisitor have always lost. The only sure weapon against bad ideas is better ideas."—ALFRED WHITNEY GRISWOLD, *president, Yale University.*

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OTHER CABLE

11 Pair, #19 Ga. Paper, Lead (4,500 Ft. Reels)	22,000 Ft.
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5 Pair, #19 Neoprene (Latex Ins.)	50 M Ft.
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